

4^o Enc. 7/2, i

Hist. lit. Encyclop. 38.

B.m.s.

ENCYCLOPÆDIA BRITANNICA.

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Angers.

ANGEREMANIA, a province of the kingdom of Sweden, bounded on the N. by Lapland and Bothnia, on the E. by the gulph of Bothnia and Medelpadia, and on the W. by Jemti and Herndel. It is full of rocks, mountains, and forests; and there is one very high mountain called *Scull*. It has excellent iron-works, and lakes abounding with fish.

ANGERMOND, a town of the duchy of Berg, in Germany, on the E. side of the Rhine, subject to the Elector Palatine. E. Long. 6. 20. N. Lat. 51. 10.

ANGERONA, in mythology, the name of a Pagan deity whom the Romans prayed to for the cure of the *quinzy*; in Latin, *angina*. Pliny calls her the *goddess of silence and calmness of mind*, who banishes all uneasiness and melancholy. She is represented with her mouth covered, to denote patience and refraining from complaints. Her statue was set up, and sacrificed to, in the temple of the goddess Volupia, to show that a patient enduring of affliction leads to pleasure.

ANGERONALIA, in antiquity, solemn feasts held by the Romans the 21st of December, in honour of Angerona, or Angeronia, the goddess of patience and silence. Festus and Julius Modestus, quoted by Macrobius, Saturn. lib. 1. cap. 10. derive the name from *angina*, "quinzy;" and suppose the goddess to have been thus denominated, because she presided over that disease. — Others suppose it formed from *angor*, "grief, pain;" to intimate that she gave relief to those afflicted therewith. — Others deduce it from *angeo*, "I press, I close," as being reputed the goddess of silence, &c.

ANGERS, a great city of France, and capital of the duchy of Anjou, with a bishop's see. It is seated a little above the place where the Sarte and the Loire lose themselves in the Maine. This last river divides the city into two equal parts, called the High and the Low Town. There are twelve parishes in the city, and four in the suburbs, which contain upwards of 36,000 inhabitants. Besides these, there are eight chapters, and a great number of convents for both sexes. Its greatest extent is along the declivity of a hill, which reaches quite down to the river side. The castle was built by St Louis, about the middle of the 13th century. The walls, fosses, and numerous towers which yet subsist, evince its former magnificence: and its situation in the centre of the city, on a rock overhanging the river, conduces to give it an air of grandeur, though at present in decay. It was the principal residence of the kings of Sicily, as dukes of Anjou, but is now in a state of total ruin. The cathedral of Angers is a venerable structure; and although it has un-

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dergone many alterations in the course of ages since its construction, yet the architecture is singular, and deserves attention. Here lies interred with her ancestors the renowned Margaret, daughter of René king of Sicily, and queen of Henry VI. of England. She expired, after her many intrepid, but ineffectual, efforts, to replace her husband on the throne, in the year 1482, at the castle of Dampierre in Anjou. Near the church of St Michael is the handsomest square in the city, from whence runs a street which has the name of the church. On one side of this street is the town-house; which has a fine tower, with a clock, raised upon an arch, which serves for a passage into the great square. There are two large bridges, which keep up a communication between the two parts of the city; and in the lesser of these there is another square, which serves for a market. The university of Angers was founded in 1398, and the academy of belles lettres in 1685. This last consists of thirty academicians. At the end of the suburbs of Bressigny are the quarries of Angiers, so famous for the fine slate which is got from thence. The pieces are of the thickness of a crown piece, and a foot square. All the houses in Angers are covered with this slate, which has gained it the appellation of the *Black City*. The walls with which king John of England surrounded it in 1214 remain nearly entire, and are of very great circumference. W. Long. 0. 30. N. Lat. 47. 28.

ANGHIERA, a town of Italy, in the duchy of Milan, and capital of a county of the same name. It is seated on the eastern side of the lake Maggiore, in E. Long. 9. 5. N. Lat. 45. 42.

ANGINA, in medicine, a violent inflammation of the throat, otherwise called *quinzy*. See *MEDICINE-Index*.

ANGINA Pectoris. See *MEDICINE-Index*.

ANGIOSPERMIA, in the Linnæan system of botany, the second order in the class Didynamia. It consists of those plants, of that class, whose seeds are inclosed in a pericarpium. In this order the stigma is generally obtuse. These are the *personati* of Tournefort.

ANGITIÆ LUCUS or **NEMUS**, (Virg.), situated on the west side of the Lacus Fucinus. The inhabitants are called *Lucenses*, by Pliny. Angitia was sister of Medea, who taught antidotes against poison and serpents, according to Sil. Italicus. But Servius on Virgil says, that the inhabitants called Medea by this name for the same reason. The town is now called *Luco*.

ANGLE, the inclination of two lines meeting one another in a point. See *GEOMETRY*.

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Anglesey.

ANGLE of Incidence, in optics, the angle which a ray of light makes with a perpendicular to that point of the surface of any medium on which it falls; tho' it is sometimes understood of the angle which it makes with the surface itself.

ANGLE of Refraction now generally means the angle which a ray of light, refracted by any medium, makes with a perpendicular to that point of the surface on which it was incident; but has sometimes been understood of the angle which it makes with the surface of the refracting medium itself.

ANGLER, a person who practises the art of angling, whether as a diversion or otherwise. See the article ANGLING.

ANGLER, in ichthyology, the English name of a species of lophus. See LOPHUS.

ANGLES, an ancient German nation, originally a branch of the Suevi; who, after various migrations, settled in that part of Denmark, and duchy of Sleswick, which to this day is called *Angel*, and of which the city of Flensburgh is the capital. Here they were known, even in the time of Tacitus, by the name of *Angli*. The origin of this name is variously accounted for. According to Saxo-Grammaticus, they were called *Angli*, from one Angulus, son to Humblus king of Denmark. Widschind, a Saxon writer, will have them to be called *Angli*, from an island in the corner or angle of the sea, which they conquered. Goropius derives their name from the Saxon word *Angel*, or *Engel*, signifying a fish-hook; the Angles, like the other Saxon nations, being greatly addicted to piracy, and on that account being so named by the neighbouring nations; as if, like hooks, they caught all that was in the sea. To this nation the British ambassadors are said to have applied when soliciting succours against the Scots and Picts. The Angles, therefore, came over in greater numbers than any other Saxon nation; and accordingly had the honour of giving the name of *Anglia* to England. See ENGLAND.

ANGLESEY (Isle of) is the most western county of North Wales. It is 24 miles in length, 18 in breadth, and sends one member to parliament. It is separated from Caernarvonshire by a strait called *Menai*, and on every other side is surrounded by the sea. It is a fertile port, and abounds in corn, cattle, flesh, fish, and fowls.

At Port Aethwy, the most general ferry into the island, there is a great passage of cattle. It is computed that the island sends forth annually from 12,000 to 15,000 heads, and multitudes of sheep and hogs. It is also computed that the remaining stock of cattle is 30,000. In 1770 upwards of 90,000 bushels of corn were exported, exclusive of wheat. The improvement in husbandry has greatly increased since the suppression of smuggling from the Isle of Man: before that time every farmer was mounted on some high promontory, expecting the vessel with illicit trade; but since that period, he sets in earnest to industry and cultivation. Not but that the island was in most remote time famous for its fertility: *Mon*, *Mam Gymry*, the Nursing-mother of Wales, was a title it assumed even in the 12th century.

This island is divided into 74 parishes, of which most of the churches are situated near the shores. By an account given on the 13th of August 1563,

there were 2010 households, or families, in Anglesey; allowing five to a family, the whole number of inhabitants in that period was 10,050. In 1776, the number of houses in Anglesey was about 3,956: allowing five persons to a family, the whole number of inhabitants was at that time 19,780; which wants only 340 of doubling the number of inhabitants in the intervening space. The chief town is *BEAUMARIS*.

In ancient times this island was called *Mon*, *Mona*, or *Moneg*. It was the great nursery of the religion of the Druids; being the residence of the Grand Druid, or chief pontiff, and consequently of all the learned doctors in that religion.

Many ancient monuments of Druidism still remain in the island.—At *Tre'r Dryw*, or the habitation of the arch druid, are several mutilated remains, which have been described by Mr Rowlands. His *Bryn Gwyn*, or *Brein Gwyn*, or royal tribunal, is a circular hollow of 180 feet in diameter, surrounded by an immense agger of earth and stones, evidently brought from some other place, there not being any mark of their being taken from the spot. It has only a single entrance. This is supposed to have been the grand consistory of the druidical administration.—Not far from it was one of the *Gorseddau*, now in a manner dispersed, but which once consisted of a great copped heap of stones, on which sat aloft a druid, instructing the surrounding people *multa de Deorum immortalium vi et potestate disputare, et juventuti tradunt*; Cæf. lib. 6.—Here were also the relics of a circle of stones, with the *cromlech* in the midst; but all extremely imperfect. Two of the stones are very large; one, which serves at present as part of the end of a house, is 12 feet 7 inches high, and 8 feet broad; and another 11 feet high, and 23 feet in girth. Some lesser stones yet remain. This circle, when complete, was one of the temples of the druids, in which their religious rites were performed. It is the conjecture of Mr Rowlands, that the whole of these remains were surrounded with a circle of oaks, and formed a deep and sacred grove: *Jam per se roborum elegant lucos, neque ulla sacra sine ea fronde conficiunt*; (Plin. Hist. Nat. xv. 44.)—Near this is *Caer Lēb*, or the moated entrenchment; of a square form, with a double rampart, and broad ditch intervening, and a lesser on the outside. Within are foundations of circular and of square buildings. This Mr Rowland supposes to have been the residence of the arch druid, and to have given the name, *Tre'r Dryw*, to the township in which it stands. At *Trev-Wry* are several faint traces of circles of stones, and other vestiges of buildings; but all so dilapidated, or hid in weeds, as to become almost formless. *Bod-drudan*, or the habitation of the druids, *Tre'r-Beirdd*, or that of the bard, and *Bodowyr*, or that of the priests, are all of them hamlets, nearly surrounding the seat of the chief druid, composing the essential part of his suite. At the last is a thick *cromlech*, resting on three stones.

The shore near Porthamel, not far from hence, is famed for being the place where Suetonius landed, and put an end in this island to the Druid reign. His infantry passed over in flat-bottom boats, perhaps at the spot still called *Pant yr Yscrappie*, or the valley of Skiffs. His cavalry crossed partly by fording, partly by swimming. Of the conflict on this occasion we have the following animated description by Tacitus *; 30.

“ Stat.

* *Annal. xiv.*

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“Stat pro littore diversa acies, densa armis virisque, intercurfantibus fœminis in modum furiarum, veste ferali, crinibus dejectis, faces preferebant; *druidæque* circum, preces diras sublati ad cœlum manibus fundentes. Novitate aspectus percutere militem, ut quasi hærentibus membris, immobile corpus vulneribus præberent. Dein cohortionibus ducis, et se ipse stimulantes, ne muliebre et fanaticum agmen pavescerent, inferunt signa, sternuntque obvios et igni suo involvunt. Præsidium posthac impositum vicis, excisq̃ue luci, sævis superstitionibus sacri. Nam cruore captivo adolere aras, et hominum fibris consulere deos fas habebant.”—Thus Englished: “On the shore stood a motley army in close array, and well armed; with women running wildly about in black attire with dishevelled hair, and like the furies brandishing their torches; surrounded by the druids, lifting up their hands to heaven, and pouring forth the most dreadful imprecations. The soldier stood astonished with the novelty of the sight. His limbs grew torpid, and his body remaining motionless resigned to every wound. At length, animated by their leader, and rousing one another not to be intimidated with a womanly and fanatic band, they displayed their ensigns, overthrew all who opposed them, and flung them into their own fires. After the battle, they placed garrisons in the towns, and cut down the groves consecrated to the most horrible superstitions: for the Britons held it right to sacrifice on their altars with the blood of their captives, and to consult the gods by the inspection of human entrails.”—There are no traces of any Roman works left in this country. Their stay was so short, that they had not time to form any thing permanent.

Near the ferry of Moel y Don appear the fine woods of Sir Nicholas Bayley, skirting the Menai for a considerable way. The wooded part of the island is on this side. It commences at Llanidan, and recalls the ancient British name of Anglesey, *Ynys Dywyll*, or the *Dark Island*, on account of the deep shade of its groves: but at present it is (except in this part) entirely divested of trees; and the climate so averse to their growth, that in most parts it is with great difficulty the gentry can raise a plantation round their houses. Plas Newydd, the seat of Sir Nicholas Bayley, lies close upon the water, protected on three sides by venerable oaks and ashes. The view up and down this magnificent river-like strait is extremely fine. The shores are rocky; those on the opposite side covered with woods; and beyond soar a long range of Snowdonian alps. Here stood a house built by Gwennllian, a descendant of Cadrod Hardd. The mansion has been improved, and altered to a castellated form by the present owner.

In the woods are some very remarkable druidical antiquities. Behind the house are to be seen two vast cromlechs. The upper stone of one is 12 feet 7 inches long, 12 broad, and four thick, supported by five tall stones. The other is but barely separated from the first: is almost a square, of five feet and a half, and supported by four stones. The number of supporters to cromlechs are merely accidental, and depend on the size or form of the incumbent stone. These are the most magnificent we have, and the highest from the ground; for a middle-sized horse may easily pass under the largest. In the lands of Llugwy, indeed, there is a most stupendous one of a rhomboidal form.

The greatest diagonal is 17½ feet, the lesser 15, and the thickness three feet nine inches; but its height from the ground is only two feet: it was supported by several stones. The Welsh, who ascribe every thing stupendous to our famous British king, call it *Arthur's Quoit*. In the woods at this place are some druidical circles nearly contiguous to each other.

At a small distance from Beaumaris, on the shore, stand the remains of Llanvaes, or the Friars. It was founded by Prince Llewelyn ap Jerwerth, and according to the general tradition of the country, over the grave of his wife Joan, daughter of King John, who died in 1237, and was interred on the spot. Here also were interred a son of a Danish king, Lord Clifford, and many barons and knights who fell in the Welsh wars. It was dedicated to St Francis, and consecrated by Howel bishop of Bangor, a prelate who died in 1240. The religious were Franciscans, or minor friars. Their church and house were destroyed, and their lands wasted, in the insurrection made soon after the death of Llewlyn, last Welsh prince, by his relation Madoc. Edward II. in consideration of their misfortunes, remitted to them the payment of the taxes due to him, which before the war were levied at the rate of L. 12, 10 s. These friars were strong favourers of Owen Glendwr. Henry IV. in his first march against Owen, plundered the convent, put several of the friars to the sword, and carried away the rest; but afterwards set them at liberty, made restitution to the place, but peopled it with English recluses. It possibly was again reduced to ruin: for Henry V. by patent, establishes here eight friars, but directs that two only should be Welsh. At the dissolution, Henry VIII. sold the convent and its possessions to one of his courtiers. They became in later days the property of a family of the name of *White* (now extinct), who built here a good mansion. It of late became, by purchase, the property of Lord Bulkeley. The church is turned into a barn, and the coffin of the princess Joan now serves for a watering-trough.—A little farther is Castle Aber Llienawg, a small square fort, with the remains of a little round tower at each corner. In the middle one stood a square tower. A foss surrounds the whole. A hollow way is carried quite to the shore, and at its extremity is a large mound of earth, designed to cover the landing. This castle was founded by Hugh Lupus Earl of Chester, and Hugh the Red Earl of Shrewsbury, in 1098, when they made an invasion, and committed more savage barbarities on the poor natives, especially on one Kenred a priest, than ever stained the annals of any country. Providence sent Magnus king of Norway to revenge the cruelties. His coming was to all appearance casual. He offered to land, but was opposed by the earls. Magnus stood in the prow of his ship, and calling to him a most expert bowman, they at once directed their arrows at the earl of Shrewsbury, who stood all armed on the shore. An arrow pierced his brain through one of his eyes, the only defenceless part. The victor, seeing him spring up in the agonies of death, insultingly cried out in his own language, *Leit loupe*, “Let him dance.” This fort was garrisoned so lately as the time of Charles I. when it was kept for the parliament by Sir Thomas Cheadle; but was taken by Colonel Robinson in 1645.

Above Llanddona is a high hill, called *Bwrdd Arthur*,

Anglesey.

Anglesey. *thur*, or Arthur's round table: the true name was probably *Din*, or *Dinas Sulwy*: for a church immediately beneath bears that of *Llanvihangle Din-Sulwy*. On the top of it is a great British post, surrounded by a double row of rude stones with their sharp points uppermost; and in some parts the ramparts are formed of small stones. In the area are vestiges of oval buildings: the largest is formed with two rows of flat stones set on end. These had been the temporary habitations of the possessors. It had been a place of vast strength: for, besides the artificial defence, the hill slopes steeply on all sides, and the brink next to the ramparts is mostly precipitous. It is worth while to ascend this hill for the sake of the vast prospect; an intermixture of sea, rock, and alps, most savagely great.

About two miles south of Plas Gwyn, the seat of Paul Panton, Esq; was situated Penmynydd, once the residence of the ancestors of Owen Tudor, second husband to Catherine of France, queen dowager of Henry V.; "who beyng (as honest Halle informs us) young and lustye, folowyng more her owne appetyte than frendely consaill, and regardyng more her private affection than her open honour, toke to husband privily (in 1428) a goodly gentylman, and a beautiful person, garniged with manye godly gyftes both of nature and of grace, called *Owen Teulher*, a man brought furth and come of the noble lignage and auncient lyne of Cadwaladar, the last kynge of the Britonnes." The match, important in its consequences, restored the British races of princes to this kingdom: These reigned long, under the title of the House of Tudor; the mixed race having ceased on the accession of Henry VII. grandson to our illustrious countryman. The remains of the residence of the Tudors are, the door of the gateway: part of the house, and the great chimney-piece of the hall, are to be seen in the present farmhouse. Some coats of arms, and dates of the building or time of repairs, are to be seen, with the initial letters of the names of the owners. The Tudors, for a considerable space before the extinction of their race, assumed the name of *Owen*. Richard was the last male of the family, and was sheriff of the county in 1657. Margaret, heiress of the house, married Coningsby Williams, Esq; of Glan y gors, in this island, who possessed it during his life. It was afterwards sold to Lord Bulkeley, in whose descendant it still continues. In the church of Penmynydd is a most magnificent monument of white alabaster, removed at the dissolution from the abbey of Llanvaes to this place; probably erected in memory of one of the House of Tudor, who had been interred there. On it is the figure of a man in complete armour, a conic helm, and mail-guard down to his breast; his lady is in a thick angular hood; their feet rest on lions, and their heads are supported by angels.

On the western point of the bay is a small cape, flat at top, called *Castell mawr*, joined to the land by a low isthmus. It is composed of lime-stone, which is carried to distant parts in small vessels, which lie in a small channel near the rock, and by their numbers frequently enliven the view. Roman coins have been found in this neighbourhood; but there are no vestiges of there having been any station. Beyond *Castell-mawr*, on the shore, are vast blocks of black marble filled with shells, coralloids, and fungitæ.

At Tryselwyn mountain is the most considerable body of copper ore perhaps ever known. The part of Tryselwyn which contains it is called *Parys mountain*. Of this mountain, and the works there carried on, we have the following very curious and particular account by Mr Pennant*:—"The external aspect of the hill is extremely rude, and rises into enormous rocks of coarse white quartz. The ore is lodged in a basin, or hollow, and has on one side a small lake, on whose waters, distasteful as those of Avernus, no bird is known to alight. The whole aspect of this tract has, by the mineral operations, assumed a most savage appearance. Suffocating fumes of the burning heaps of copper arise in all parts, and extend their baneful influence for miles around. In the adjacent parts vegetation is nearly destroyed: even the mosses and lichens of the rocks have perished; and nothing seems capable of resisting the fumes but the purple melic grass, which flourishes in abundance. It is thought that the ore had been worked in a very distant period. Vestiges of the ancient operations appear in several parts, carried on by trenching, and by heating the rocks intensely, then suddenly pouring on water, so as to cause them to crack or scale; thus awkwardly supplying the use of gunpowder. Pieces of charcoal were also found, which proves that wood was made use of for that purpose. As the Britons imported all works in brass, it is certain that the Romans were the undertakers of these mines; and it is very probable that they sent the ore to Caerhên to be smelted, the place where the famous cake of copper was discovered. They might likewise have had a smelting-hearth in this island; for a round cake of copper was discovered at Llanvaethlle, a few miles from this place. Its weight was fifty pounds, and it had on it a mark resembling an *L*.

"In the year 1762, one Alexander Frazier came into Anglesey in search of mines. He visited Parys mountain; called on Sir Nicholas Bayley, and gave him so flattering an account of the prospect, as induced him to make a trial, and sink shafts. Ore was discovered; but before any quantity could be gotten, the mines were overpowered with water. In about two years after, Messrs. Roe and Co. of Macclesfield applied to Sir Nicholas for a lease of Penrhyn ddu mine in Caernarvonshire; with which they were, much against their wills, compelled to take a lease of part of this mountain, and to carry on a level, and make a fair trial. The trial was accordingly made; ore was discovered; but the expences overbalanced the profits. They continued working to great loss; and at length determined to give the affair up. They gave their agent orders for that purpose; but he, as a final attempt, divided his men into ten several companies, of three or four in a partnership, and let them sink shafts in various places, about eight hundred yards eastward of a place called the *Golden Venture*, on a presumption that a spring, which issued from near the place, must come from a body of mineral. His conjecture was right; for in less than two days they met with, at the depth of seven feet from the surface, the solid mineral, which proved to be that vast body which has since been worked to such advantage. The day that this discovery was made was March 2. 1768: which has ever since been observed as a festival by the miners. Soon after this discovery, another adventure was begun

Anglesey.

+ *Tour in Wales, ii.*
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Anglesey. by the reverend Mr Edward Hughes, owner of part of the mountain, in right of his wife Mary Lewis of Llys Dulas; so that the whole of the treasure is the property of Sir Nicholas Bayley and himself. The body of copper ore is of unknown extent. The thickness has been ascertained in some places by the driving of a level under it, several years ago, and it was found to be in some places twenty-four yards. The ore is mostly of the kind called by Cronsted *Pyrites cupri flavo viridescens*, and contains vast quantities of sulphur. It varies in degrees of goodness; some of it is rich, but the greater part poor in quality.

"There are other species of copper ore found here. Of late a vein of the *Pyrites cupri griseus* of Cronsted, about seven yards wide, has been discovered near the west end of the mountain: some is of an iron grey, some quite black; the first contains sixteen lb. of copper per cbl. the last forty. An ore has been lately found, in form of loose earth, of a dark purplish colour; and the best of it has produced better than eight in twenty. Some years ago, above thirty pounds of native copper was found in driving a level through a turbery; some was in form of moss, some in very thin leaves.

"It is quarried out of the bed in vast masses; is broken into small pieces; and the most pure part is sold raw, at the rate of about 3*l.* to 6*l.* per ton, or sent to the smelting-houses of the respective companies to be melted into metal. Mr Hughes has great furnaces of his own at Ravenhead near Liverpool, and at Swansey in South Wales. An idea of the wealth of these mines may be formed, by considering that the Macclesfield company have had at once fourteen thousand tons of ore upon bank, and Mr Hughes thirty thousand.

"The more impure ore is also broken to the size of about hens eggs; but in order to clear it from the quantity of sulphur with which it abounds, as well as other adventitious matter, it must undergo the operation of burning. For that purpose it is placed between two parallel walls of vast length: some kilns are 20, others 40, and 50 yards in length; some 10, others 20, feet wide, and above 4 feet in height. The space between is not only filled, but the one is piled many feet higher, in a convex form, from end to end. The whole is then covered with flat stones, closely luted with clay; and above is placed a general integument of clay, and small rubbish of the work, in order to prevent any of the fumes from evaporating. Of late, some kilns have been constructed with brick arches over the ore, which is found to be the best method of burning. Within these few years, attempts are made to preserve the sulphur from flying away; and that is done by flues made of brick whose tops are in form of a Gothic arch, many scores of feet in length. One end of these opens into the beds of copper which are to be burnt. Those beds are set on fire by a very small quantity of coal, for all the rest is effected by its own phlogiston. The volatile part is confined, and directed to the flues; in its course the sulphureous particles strike against their roofs, and fall to the bottom in form of the finest brimstone; which is collected and carried to adjacent houses, where it is melted into what is called in the shops *stone brimstone*.

"The beds of copper, thus piled for burning, are

of vast extent. Some contain 400 tons of ore, others 2000. The first require four months to be completely burnt, the last near ten. Thus burnt, it is carried to proper places to be dressed, or washed, and made merchantable. By this process the ore is reduced to a fourth part in quantity, but considerably improved in quality: and by this means the water is strongly or richly impregnated with copper, which is dissolved by the acid quality of the sulphur; and is collected or precipitated again by iron in the above-described pits. The iron is all dissolved.

"But a far richer produce of copper is discovered from the water lodged in the bottom of the bed of ore, which is highly saturated with the precious metal. This is drawn up, either by means of whimsies or windmills, to the surface, and then distributed into numbers of rectangular pits 36 feet long, some pits more some less, 12 to 15 feet broad and 20 inches deep. To speak in the language of the adept, Venus must make an assignation with Mars, or this solution will have no effect. In plain English, a quantity of iron must be immersed in the water. The kind of iron is of no moment; old pots, hoops, anchors, or any refuse, will suffice; but of late, for the convenience of management, the adventurers procure new plates, four feet long, one and a half broad, and three quarters of an inch thick. These they immerse into the pits. The particles of copper instantly are precipitated by the iron, and the iron is gradually dissolved into a yellow ochre. Great part of it floats off by the water, and sinks to the bottom. The plates, or the old iron (as it happens), are frequently taken out, and the copper scraped off; and this is repeated till the whole of the iron is consumed. The copper thus procured differs little from native copper, and is prized accordingly, and sold for prices of L. 25 to L. 45 a ton.

"This discovery is far from new: it has been practised long in the Wicklow mines in Ireland; and above a century in those of Hern-grundt in Hungary, where it is called *ximent copper*. The waters of the Hungarian mines are much more strongly impregnated with copper than those of Parys mountain. The first effects its operation in 12 or about 20 days, the last requires two months. Horse-shoes, iron made in shape of hearts, and other forms, are put into the foreign waters; and when perfectly transmuted, are given as presents to curious strangers.

"The ore is not got in the common manner of mining, but is cut out of the bed in the same manner as stone is out of a quarry. A hollow is now formed in the solid ore open to the day, and extends about 100 yards in length, about 40 yards in breadth, and 24 yards in depth. The ends are at present undermined, but supported by vast pillars and magnificent arches, all metallic; and these caverns meander far under ground. These will soon disappear, and thousands of tons of ore be gotten from both the columns and roofs. The sides of this vast hollow are mostly perpendicular, and access to the bottom is only to be had by small steps cut in the ore; and the curious visitor must trust to them and a rope, till he reaches some ladders, which will conduct him the rest of the descent. On the edges of the chasms are wooden platforms, which project far; on them are windlasses, by which the workmen are lowered to transact their business on the face

Anglesey,
Angling.

of the precipice. There suspended, they work in mid air, pick a small place for a footing, cut out the ore in vast masses, and tumble it to the bottom with great noise. In such situations they form caverns, and there appear safely lodged till the rope is lowered to convey them up again. Much of the ore is blasted with gunpowder, eight tons of which are said to be annually used for the purpose.

"Nature hath been profuse in bestowing her mineral favours on this spot: for above the copper ore, and not more than three quarters of a yard beneath the common soil, is a bed of yellowish greasy clay, from one to four yards thick, containing lead ore, and yielding from 600 to 1000 pounds weight of lead from one ton; and one ton of the metal yields not less than 57 ounces of silver. Mixed with the earth, are frequently certain parts of the colour of cinnabar. Whether these are symptomatic of the sulphureous arsenical silver ores or of quicksilver, I will not pretend to decide. Something interferes with the successful smelting of this earth in the grate; insomuch that it has not yet been of that profit to the adventurers which might reasonably be expected from the crucible-assays of it, and they have at this time about 8000 tons on bank undisposed of. This place has been worked for lead ore in very distant times. In the bottom of the pool was found an ancient smelting-hearth of grit-stone, and several bits of smelted lead, of about four inches in length, two in breadth, and half an inch thick.

"These works have added greatly to the population of the island; for about 1500 persons are employed; who, with their families, are supposed to make near 8000 persons, getting their bread from these mines. The little village of Amlwch, the port of the place, is increasing fast, and the market grows considerable. At the season of the greatest work, Mr Hughes's men alone receive for many weeks L. 200 in one week, and L. 150 in another, merely for subsistence. The port is no more than a great chasm between two rocks, running far into land, and dry at low-water; into which sloops run, and lie secure to receive their lading."

Near Kemlyn Bay is a quarry of marble, common to this place, some parts of Italy, and to Corsica, and known in the shops by the name of *Verde di Corsica*. Its colours are green, black, white, and dull purple, irregularly disposed. In different blocks one or other of the colours are frequently wanting; but among the green parts are often found narrow veins of a most elegant and silky white asbestos. It is a compound species of marble: part is calcareous and may be acted on by aquafortis. The green parts partake of the nature of jasper. It is apt to be intersected by small cracks, or by asbestine veins, therefore incapable of taking a high polish. This quarry lies on the lands of Monachty, in the parish of Llan-Fair-Ynghornwy; and it is found again in the isle of Skerries, off this parish. Neither the quarry nor the asbestos are at present in use. In Rhoscolyn parish, a green amianthus, or brittle asbestos, is met with in great plenty in a green marble similar to the above; but by reason of the inflexible quality of its fibres not applicable to the same use.

ANGLING, among sportsmen, the art of fishing

with a rod, to which are fitted a line, hook, and bait. Angling. See *FISHING-Rod*, *FISHING-Hook*, *FISHING-Fly*.

The angler's first business is to attract the fish to the place intended for angling. The method of doing this, in standing waters, by throwing in grains, chopped worms, and the like, is well known: but the chief difficulty is in running rivers and brooks. The method, in this case, is to prepare a tin-box capable of holding some hundred of worms, bored on all sides, and full of holes of such a size as they may be just able to crawl out at; there must be a plummet fastened to this box to sink it, and a line to draw it back at pleasure; in this case it is to be thrown into the water in a proper place, above which the angler may stand under cover. The worms will slowly and gradually crawl out of this box, and the fish will be gathered about to feed on them; the baited hook is to be thrown in higher up and carried down by the stream. If this method do not bring the fish about the place in a little time, there is reason to suspect that some pike lies lurking thereabout, and deters them: in this case, it is proper to throw out a baited hook, and he will generally be taken; after this the attempt will succeed.

When the angler takes his stand, he is to shelter himself under some tree or bush, or stand so far from the brink of the water that he can only discern his float; as the fish are timorous and easily frightened away. The angling rod must be kept in a moderate state, neither too dry nor too moist: in the first case, it will be brittle: in the other, rotten. When pastes are used, it is proper to mix a little tow with them, and rub them over with honey; finally, a small anointing with butter is of great use to keep them from washing off the hook. The eyes of any fish that is taken are an excellent bait for almost any other kind of fish. The best way of angling with the fly is down the river, and not up; neither need the angler ever make above half a dozen of trials in one place, either with fly or ground bait, when he angles for trout: by that time the fish will either offer to take, or refuse the bait and not stir at all.

In a pond, the best place for the angler to take his stand is usually that where the cattle go up into water: in rivers, if breams are fished for, it should be in the deepest and most quiet places; if eels, under the banks of rivers that hang over; perch are to be expected in clean places, where the stream is swift; and chub in deep shaded holes: roach are mostly found where the perch are, and trout only in swift and clear streams. Places where there are many weeds, or old stumps of trees, harbour fish in great numbers, and they usually bite freely there; but there is danger of entangling the line, or fastening the hook to the weeds. In case of this accident, recourse is to be had to a ring of lead, of about six inches round, fastened to a small packthread: this ring is to be thrust over the rod, and let fall into the water. It will descend to the place where the hook is entangled; and then, by pulling the packthread gently, the hook will be soon disengaged, or at the worst it can only be broke off near the end of the line; whereas, when this is not employed, the rod itself is sometimes broken, or the line nearer its upper end.

Deep waters are best for angling in, for the fish do not love to be disturbed by wind and weather.

The

Angling
||
Anglus.

The openings of sluices and mill-dams always bring fish up the current to seek for the food which is brought with the stream; and angling in these places is usually successful.

The best season is from April to October; for, in very cold stormy weather, the fish will not bite: the best times of the day are from three till nine in the morning, and from three in the afternoon till sun-set. In an easterly wind, there is never much sport for the angler; the southerly winds are the best for his purpose, and a warm but lowering day is most of all to be chosen; a gentle wind, after a sudden shower, to disturb the water, makes a very good opportunity for the angler: the cooler the weather in the hottest months, the better; but in winter, on the contrary, the warmer the day the better. A cloudy day, after a bright moonlight night, is always a good day for sport; for the fish do not care for going after prey in the bright moonshine, and are therefore hungry the next morning.

Those who are fond of angling might save themselves some fruitless trouble by observing when small fish in a jar take or refuse food. See FISH.

The several methods of angling for salmon, trout, carp, tench, perch, pike, dace, gudgeons, roach, flounder, &c. may be seen under the article FISHING.

ANGLO-CALVINISTS, a name given by some writers to the members of the church of England, as agreeing with the other Calvinists in most points except church-government.

ANGLO-Saxon, an appellation given to the language spoken by the English Saxons; in contradistinction from the true Saxon, as well as from the modern English.

ANGLUS (Thomas), an English priest, well known for the singularity of his opinions, and several little tracts which he wrote in the 17th century. He went by several names. Mr Baillet says his true name was *White*; but that he used to disguise it under that of *Candidus*, *Albus*, *Bianchi*, and *Richworth*; but he was most known in France by the name of *Thomas Anglus*. Des Cartes generally called him Mr *Vitus*. He passed some time in most countries of Europe; but his longest stay was at Rome and Paris. When he was in England, he lived a considerable time in the family of Sir Kenelm Digby; and seems to have had a great esteem for the opinions of this gentleman, as may be seen in his writings, particularly in the Preface to his Latin work concerning the Institutions of the Peripatetic Philosophy, according to the hypothesis of Sir Kenelm. He was a great advocate for the peripatetic philosophy. He attempted even to make the principles of Aristotle subservient to the explaining the most impenetrable mysteries of religion; and with this view he engaged in the discussion of predestination, free-will, and grace. Mr Baillet says, "What he wrote upon this subject resembles the ancient oracles for obscurity." In such abstruse points as we have mentioned, he was much embarrassed; and, by giving too great scope to his own thoughts, he pleased neither the Molinists nor Jansenists. He is allowed, however, to have been a man of an extensive and penetrating genius. On the 10th of June 1658, the congregation of the Index Expurgatorius at Rome condemned some treatises of Thomas Anglus. The doctors of Douay censured also 22 propositions extracted from his Sacred Institutions.

He published his *Supplicatio postulativa justitie*, in opposition to their censure; wherein he complains that they had given him a vague undetermined censure, without taxing any particular proposition. He died some time after the restoration of Charles II. but in what year is uncertain.

ANGOL, a city of Chili in South America, situated in W. Long. 78°. and S. Lat. 38°.

ANGOLA, a kingdom on the western coast of Africa, lying, according to the most probable accounts, between Lat. 8. 30. and 16. 21. South, forming a coast of upwards of 480 miles; but how far it extends from west to east, has never been exactly determined. Angola Proper is bounded on the north by the river Danda, which separates it from Congo; and on the south by the Coanza, by which it is separated from Benguela. This last, however, is now included in the kingdom of Angola, having been conquered by its monarchs, though it still retains the name of kingdom, and is included in the dimensions we have just now given. The air here is very hot and unwholesome, and the country mountainous; there being but few plains to be met with in it, except on the sea-coast, and between the huge ridges of mountains.

That part of the kingdom which we have distinguished by the name of *Angola Proper*, was subject to the kings of Congo in the year 1484, when the Portuguese first discovered the country: but how long it had been so before that time, is not known; the inhabitants being utterly destitute of chronology, and have no other way of distinguishing past events, but by saying they happened in such a king's reign. Neither, though Angola became a distinct kingdom since its discovery by the Portuguese, is it known with more certainty at what time that revolution happened; or whether the Portuguese were not concerned in assisting the viceroy of the king of Congo, who governed the province of Angola, to set up for himself.

All accounts agree, that this kingdom was founded by one *Ngola* or *Angola*, from whom it took its name. According to the tradition of the country, this *Ngola* was a smith, and the inventor of that trade, in which he had been instructed by the demons of the country. In consequence of this, he became exceeding rich, not in gold, silver, or shell-money, which were not at that time in use, but in corn, cattle, and fruits, which were then exchanged in traffic. The country being not long after visited by a grievous famine, *Ngola* generously relieved his distressed countrymen, and saved the lives of some thousands. In gratitude for this generosity, he was unanimously chosen king; and hence the smith's trade is reckoned among the royal arts of Angola.

According to other accounts which can be more depended upon, *Ngola* was the king of Congo's viceroy; who, having become powerful by the reduction of several of the neighbouring states, was induced to set up for himself. Dreading, nevertheless, the power of his old master, he chose to send him the usual tribute and presents annually, till he reckoned himself firmly seated on the throne, and had secured it to his descendants. His measures were greatly facilitated by the wars which the king of Congo was then engaged in with the *Giagas*, a barbarous nation in the neighbourhood. These made such a powerful inroad into his dominions that he was glad to ask assistance from *Ngola*; not as a subject, but

Angol,
Angola.

Originally
province of
Congo.

Tradition
concerning
its beco-
ming a di-
stinct king-
dom.

More au-
thentic ac-
count.

Angola. as a friend and ally. This was readily granted; and the two monarchs continued ever after sending presents and assistance to each other, and encouraging a mutual commerce between their subjects.

4
Ngola the
first king.

Ngola lived to a great age, highly respected by his subjects, and in alliance with the king of Congo and the Portuguese, whose numerous settlements on the coast had made them become very powerful. According to the custom of the country, he had many wives and concubines. By his chief favourite he had three daughters, *Zunda*, *Riangola*, *Tumba Rianga*, and another whose name is unknown. Towards the latter part of his life, the king's chief care was to secure the crown to the eldest of these; for which purpose he consulted his beloved queen, who encouraged him in the design with all the eloquence in her power. By her advice, he sent for his lieutenant-general, a favourite slave, whom he had created viceroy over the whole kingdom, to acquaint him with his resolution. The artful minister did not fail to applaud his design, though his intention was to defraud the princess, and seize the throne for himself. He accordingly took the opportunity, one day, when that princess and the whole court were employed in sowing their lands, to spread a report that the Angolic enemies had entered the kingdom, and were destroying every thing with fire and sword. In this confusion, the treacherous viceroy conducted the three princesses to the royal palace; and acquainting Ngola with the pretended danger, urged him to betake himself to a speedy flight. The frightened monarch, unable to stir with age, desired his minister to take the most proper means for his safety: whereupon, being a stout young fellow, he takes his majesty on his back, and carries him into a neighbouring wood; where he no sooner had him in a convenient place, than he stabbed him with a dagger. This stratagem was too shallow to remain long concealed; the murderer was quickly discovered, and many of the nobles rose in arms against him; but finding his party too strong to be opposed, they were at last obliged to submit, and suffer him quietly to ascend the throne, upon his publicly declaring that he had not seized it but with a view of securing it to the princess *Zunda Rianga*.

5
Murdered
by his prime
minister,
who seizes
the throne.

6
Death of the
usurper,
who is suc-
ceeded by
*Zunda Ri-
angola*.

7
Murders
her ne-
phew.

To this princess the usurper palliated his conduct in the best manner he could; and she had art enough to disguise her resentment so effectually, that he never discovered the smallest occasion for jealousy. At last, his sudden death gave *Zunda* an opportunity of ascending the throne peaceably; when she behaved with such moderation and justice, as to gain the love and affection of all her subjects. Her jealous temper prevented her from marrying; and, by giving too much way to it, she came at last to dread as rivals the two sons of her younger sister *Tumba*, and to form designs against their life. To accomplish her purposes, she ordered them to be brought to court, pretending to have them educated under her own eye. This was declined for some time; but at length the queen prevailed so far as to have the eldest sent to her; whom she no sooner got into her power, than she caused him to be massacred, with all his attendants; only one escaping, all covered with wounds, to carry the dreadful news to the princess and her husband.

On hearing of this bloody act, the afflicted parents immediately sallied forth at the head of all their vassals.

They were waited for by Queen *Zunda* at the head of a numerous army; but no sooner did her soldiers perceive the parents of the deceased prince, than they immediately abandoned the queen to their resentment. *Tumba* immediately rushed upon her sister, and stabbed her to the heart; after which, she commanded her entrails to be taken out, and thrown into the hole in which her son's body had been cast. Upon this *Tumba* was crowned queen of Angola, and invited her husband to participate with her in the management of public affairs. This offer he was too wise to accept; and *Tumba*, upon his refusal, resigned the crown into the hands of her surviving son, named *Angola Chilivagni*. He proved a great and wise prince, extending his dominions by conquest, and gaining the love of his subjects by the moderation and equity of his government. He was succeeded by one of his younger sons, named *Dambi Angola*; who no sooner ascended the throne, than he put all his brethren to death, lest they should unite in favour of the eldest. The rest of his reign proved conformable to such a beginning. He was a monster of cruelty, avarice, lewdness, and perfidy. Death, however, in a short time, happily delivered his subjects from this tyrant; who, notwithstanding his infamous life, was buried with the greatest magnificence; and a mount was erected over his grave, consisting, according to the custom of the country, of a prodigious number of human victims which had been sacrificed to his ghost. *Dambi Angola* was succeeded by *Ngola Chilivagni*, a warlike and cruel prince. He conquered many nations, and made the most dreadful inroads into the kingdom of Congo, along the rivers of *Danda*, *Lucalla*, *Zanda*, and *Coanza*: whose waters were often tinged with the blood of thousands whom he massacred in his excursions. Notwithstanding these butcheries, *Ngola Chilivagni* showed such generosity to those who readily submitted to him, that he was sure to conquer, not only wherever he came, but wherever he seemed to direct his forces. At last, as if weary of conquest, he planted a tree on the banks of the *Coanza*, about eight leagues from *Loanda San Paulo*, as a boundary to his ravages. This tree the Portuguese called *Ifanda*, or *Ifandaura*; and afterwards erected a fortress near it.

8
Is herself
murdered
by her
sister.

9
*Dambi An-
gola* a cruel
tyrant.

10
*Ngola Chi-
livagni*, his
conquests.

11
Fancies
himself a
god.

The same folly and insolence which took place in the breast of Alexander the Great, on account of his rapid conquests, soon puffed up the mind of this petty African tyrant. Because he had conquered and ravaged some of the neighbouring countries, and brought under his subjection a few cowardly barbarians; he first fancied himself invincible, and then that he was a god. He demanded the same respect and adoration that was paid to their other deities; and with this demand his subjects were servile enough to comply. This pretended deity, however, was forced to submit to the fate of other mortals, and died without leaving a successor behind him.

On the decease of *Ngola Chilivagni*, the states elected *Ngingha-Angola-Chilombo-Kickafanda*, great-nephew to queen *Tumba's* husband, as his successor. He proved such a rapacious and cruel tyrant, that his subjects universally wished for his death; which, luckily for them, soon happened. He was interred with the usual pomp and solemnities, particularly that of having a whole hecatomb of human victims sacrificed upon his grave.

Angola.
12
Rovolt a
gainst Ban-
di Angola.

13
Quelled by
the assist-
ance of the
king of
Congo and
the Portu-
guese.

14
The king's
daughter
falls in love
with the
Portuguese
general;

15
Who retires
to Congo.

16
Lays a plan
for the con-
quest of An-
gola before
the king of
Portugal.

grave. His son Bandi Angola, who succeeded him, proved yet a greater tyrant than his father; so that he soon became intolerable to his subjects. A general revolt ensued, in which his subjects called in the cannibal Giagas to their assistance. These immediately poured in like a band of hungry dogs hastening to feed upon a carcase; and having defeated and devoured the forces of the tyrant, besieged him in an inaccessible mountain; where, not being able to come at him, they resolved to reduce him by famine. Bandi Angola applied to the king of Congo for assistance. As it was the interest of that prince to hinder the ravenous Giagas from entering into the Angolic dominions, whence they could so easily pass into his own, he did not hesitate at granting his request; and ordered a strong reinforcement of the Portuguese, of whose valour he had a high opinion, and of whom he entertained a great number at his court, to march to the assistance of the king of Angola. The command of the army was given to one of the most experienced Portuguese officers; who, depending more on the handful of Europeans he had under his command than on the Congolese, attacked the rebels, though greatly superior in number; and having utterly defeated them, restored the king of Angola to his throne.

This essential piece of service so endeared the Portuguese to Bandi Angola, that he took them into his service, and even into his council. Their general became a great favourite of the king, but much more so of his daughter, who conceived a violent passion for him. Unfortunately for them both, the amour was carried on with so little precaution on her part, that the king quickly discovered it; and immediately formed a resolution of exterminating the Portuguese all at once. Such violent measures, however, could not be concerted so privately but the princess got some intelligence of it; and having apprised her lover of his danger, he immediately withdrew into Congo, taking with him as many of his countrymen as he conveniently could. The king of Congo expressed such strong resentment against Bandi Angola for his ingratitude, that the Portuguese general would have probably prevailed upon him to declare war against Angola, had he not been obliged to defend his own dominions against a neighbouring prince who then made an invasion. This afforded that general a fair pretence of asking leave to return home; promising to come with such reinforcements as would enable the king of Congo to revenge himself for the affront put upon him by the Angolic monarch. His real intention, however, was, to give the king of Portugal an opportunity of seizing upon the kingdom of Angola.

On his return to Lisbon, the Portuguese general having laid his plan before the king, it was so well relished, that an armament was ordered to be fitted out, well furnished with every necessary for building fortresses, &c. and a sufficient number of men. The wind proving favourable all the way back, the Portuguese soon arrived safe at Loanda San Paulo; whence the general dispatched a messenger to acquaint the king of Congo with his arrival, and to make him some rich presents. These were no sooner gone than the admiral sailed up the Coanza; and, landing without opposition in the kingdom of Angola, set about erecting a fortress in

a convenient situation, which was completed in a few days.

The king being informed of the return of the Portuguese, and of their fortifying themselves on advantageous ground, gathered together a numerous army: but his forces, though upwards of 100,000 in number, were utterly defeated by the Portuguese; vast numbers killed, and many more carried into slavery. The admiral now ravaged the whole country, putting all to fire and sword, and making himself master of every advantageous spot of ground. The king, however, had still the good luck to escape all the stratagems that were laid for him; and once more got safe to his inaccessible fortresses.

All this time Bandi Angola had himself tyrannized, and allowed his favourites to tyrannize, in such a manner, that his subjects were become no less weary of his government than when they formerly revolted. Being now exasperated beyond measure at the calamitous war of which he had been the occasion, they formed a design of putting an end to his life; and in order to draw him out of his retreat, where he wallowed in all manner of debauchery, they had recourse to the following stratagem: A deputation was sent, acquainting him with the revolt of one Cuculo Cabazzo; who, at the head of a numerous band, committed the most cruel ravages. They besought his majesty, either to levy a sufficient number of troops, and march in person against him, or to allow them to arm themselves against him. The credulous king complied with this last proposal; and granted them leave to raise what forces might be thought necessary. Four days after, notice was sent to the king, that his subjects had attacked the rebels, and had been repulsed with loss; but that, if his majesty would but condescend to animate them with his presence, the sight of him would inspire them with such courage, that they would assuredly prove victorious. This had the desired effect; and the king set out a few days after, without any other precaution than his own guards, to head his army which was encamped on the banks of the Lucalla. He no sooner appeared in view, than all the chief officers came out to meet him; and having, under pretence of paying their respects, gradually separated him from his guards, they fell upon him and dispatched him at once.

Bandi Angola was succeeded by his son Ngola Bandi, whose mother had been a slave, and whose title to the crown was consequently disputable, according to the laws of the country. Of this the new king being well apprised, thought proper to begin his reign by murdering every person who had opposed his election. He began with the *Tendula*, or commander of the king's rear-guard; who, by his office, is the chief of the electors, and the person who governs the kingdom during the interregnum. Him he ordered to be put to death, with all his family. These were followed by the principal officers of his father's court; all his concubines, together with their parents and near relations, whom he caused to be butchered; together with his half-brother, his father's son by a favourite concubine, and then but an infant. He did not spare even the son of his sister Zingha Bandi, whom she had by one of her paramours. The interest of his sister had contributed greatly to raise this tyrant to the throne; and his in-

Angola.

17
Defeats the
Angolans.

18
Bandi An-
gola mur-
dered.

19
Cruelty of
the new
king.

Angola. gratitude, with the murder of her son, so exasperated her, that she swore to be revenged on him in the same way.

20
Makes war
on the Por-
tuguese,
and is redu-
ced to great
distress.

The Portuguese were the next objects of his resentment. These he so much dreaded on account of their valour and policy, that he immediately declared war, resolving not to lay down his arms till he had exterminated them to the last man, or driven them totally out of his dominions. His rashness, however, cost him dear. Myriads of the Angolic poltroons were overthrown by an handful of Portuguese; and the king himself was forced to fly, first into the island of Chiconda in the river Coanza, and then into the desarts of Oacco. Here his conquerors, out of great clemency, allowed him to live among the wild beasts, without any other sustenance than what the desarts afforded. He had the misfortune also to lose his queen and two sisters Cambi and Fungi, who were taken prisoners by the Portuguese, but honourably treated.

21
His teach-
cry.

The king being informed of this, sent an embassy to treat of their ransom and an exchange of prisoners. The proposal was readily agreed to; and the princesses were sent back, laden with presents. The king, however, refused to perform his part of the agreement, and thereby plunged himself into still greater difficulties. A new Portuguese viceroy being arrived about this time, Ngola was quite at a loss how to excuse the non-performance of his part of the treaty. At last he had recourse to his exasperated sister Zingha; and having excused, as well as he could, the murder of her son, proposed to send her on a splendid embassy to the viceroy. Having consented, but without forgetting her resentment, she set out, as plenipotentiary for the king of Angola, with a magnificent retinue, was received with all the honour due to her rank, and lodged in a splendid palace prepared for her.

22
Sends his
sister Zing-
ha on an
embassy.

At the first audience Zingha had of Don John (the Portuguese viceroy), she was greatly surprised to find a stately elbow-chair prepared for him to sit upon, and for herself only a rich tapestry spread on the floor, with a velvet cushion embroidered with gold, and placed over against the chair of state. Dissembling her displeasure, however, she beckoned to one of the ladies of her retinue, commanded her to lay herself down on her elbows and knees upon the carpet, and sat herself upon her back during the whole time of the audience. She behaved with such address and dignity, as to gain the admiration of the whole council. A proposal was made of entering into an alliance offensive and defensive with the king of Angola, provided he acknowledged himself the vassal of the king of Portugal, and submitted to pay a yearly tribute. To this Zingha replied, that such conditions were indeed fit to be imposed upon those who had been conquered by the sword; but not upon a great and powerful monarch, who only sought their friendship and alliance: upon which the treaty was concluded on both sides, without any other conditions than the exchange of prisoners. The audience being over, Don John took notice to Zingha, as he conducted her out of the hall, that the lady who had served her as a seat, continued still in the same posture; upon which she replied, That it did not become the ambassador of a great monarch to make use of the same chair twice, so she looked upon her as a piece of cast-off goods not worthy of further notice.

Zingha was so taken with the honours done her by the Portuguese, and so intent upon observing the order, dress, arms, &c. of their troops, that she staid at Loanda a considerable time; during which she was instructed in the Christian religion, and consented to be baptized. Don John and his spouse were the sponsors; who dismissed her soon after, with all possible honours, and highly satisfied with her reception and success. At her return, she took care to have the articles ratified by her brother; who expressed his approbation of them, and the highest obligations to her. He even went so far as to desire the viceroy to send him some proper persons to instruct him in the Christian religion, which he said he was very desirous of embracing. This request was immediately granted; and Don Denis de Faria, a negro priest, a native of Angola, was dispatched, along with an officer of distinction, to stand godfather to the king. These met at first with a gracious reception; but when they came to talk of baptism, Ngola altered his tone, and told them it was too much below his dignity to receive it from the son of one of his slaves, and sent them both back. This was cried up by the courtiers as a princely act: but Zingha represented, that it could not fail to exasperate the viceroy; and tried all possible means to dissuade him from it, but in vain. He suffered, however, his other two sisters, Cambi and Fungi, to be baptized; which was performed in 1625, with a splendor suited to their dignity.

As no experience seems to have been a sufficient antidote against the innate folly of Ngola Bandi, he soon after took it into his head to make war on the Portuguese, and invaded some of their territories. This last action proved his ruin: his troops were all cut off, and himself forced to swim for his life to a small island in the Coanza, about a mile long, and two bow-shoots in breadth; whither the Portuguese pursued and surrounded him; so that he had no other chance, but either to fall into their hands, or be devoured by the wild beasts with which the place swarmed. From both these dangers he was relieved by a dose of poison, given him, as was supposed, by his sister Zingha. Before this time, however, he had taken care to send his eldest son to the country of the Giagas, and put him under the care of one of their chiefs, called *Giaga Caza*, whom he besought to take care of him, and protect him from his aunt Zingha, as he rightly imagined she would not fail of attempting his life, in order to secure herself on the throne.

Zingha Bandi was crowned queen of Angola, without opposition, in 1627.—She was a very artful woman, endowed with great presence of mind, firm in her resolutions, of an intrepid courage, and a great mistress in the art of dissimulation. She inherited a large share of her brother's jealous and cruel temper, to which she would not hesitate to sacrifice her nearest relations, if they gave her the least umbrage.—To this jealousy, therefore, she resolved to sacrifice her nephew, as well knowing he had a better title to the crown than herself. She made use of the most solemn oaths to draw him out of the hands of his guardian, protesting that she had accepted of the throne with no other view than to preserve it for him. But Giaga, being well acquainted with her temper, was proof against all her oaths and fair speeches.—Zingha, finding this method ineffectual, pretended

Angola.

24
Embraces
the Chri-
stian reli-
gion.

25
War again
declared a-
gainst the
Portuguese.

26
The king
poisoned.

27
Zingha
Bandi
crowned
queen.

Angola.

pretended a desire of resigning the crown to her nephew, to which she said she had no other objection, than that she was afraid he was yet incapable of assuming the reins of government. She therefore desired an interview with him, though ever so short, that she might satisfy herself in this particular, and promised to detain him no longer than Giaga should think necessary. Giaga thought there could be no danger in consenting to a short interview; and therefore sent the unfortunate prince to her, attended by a magnificent retinue. The cruel queen no sooner got him in her power, than she murdered him with her own hand, and caused his body to be thrown into the Coanza, ridding herself, by that inhuman act, of a dangerous rival, as well as revenging herself on her brother, as she had sworn to do, for the murder of her son.

28
She murders her nephew.

Zingha's next scheme was to rid herself of the Portuguese, who had established themselves in such a manner as to be almost entire masters of the country. They had built fortresses on every convenient spot that suited them, especially near her principal towns, which they could level with the ground with the greatest ease. They had engrossed all her commerce, were become very wealthy, and their numbers increased daily; so that they were dreaded not only by her subjects, but by all the neighbouring nations. As Zingha was of a martial temper, she did not long hesitate. She quickly made all necessary provisions, strengthened herself by alliances with the Giagas, and other idolatrous nations, and even with the Dutch and the king of Congo. With this combined force she attacked the Portuguese so suddenly and unexpectedly, that she gained some advantages over them; and the Dutch made themselves masters of San Paulo de Loando, and soon after of some of the best provinces in the kingdom. This happened in the year 1641; and the Portuguese did not recover these places till the year 1648, when the Dutch were entirely driven out of Angola.

29
Declares war against the Portuguese.

30
Her bad success.

Zingha's successes proved still more short-lived. Her allies the Congoese were so completely overthrown, that they were forced to sue for peace; which the Portuguese did not grant till they had obtained a sufficient number of hostages, and obliged the Congoese to deliver up to them some considerable posts, upon which they immediately erected fortresses. Zingha's troops were now defeated in every battle; and these defeats followed one another so close, that she was soon abandoned, not only by her allies, but by her own troops. She was now constrained to abandon her dominions, and retire to some of the eastern deserts, whither the Portuguese did not think it worth while to follow her.

Zingha being reduced to such distress, the Portuguese, after giving her some time to ruminate on her situation, sent her proposals of peace, upon condition that she should become tributary to the crown of Portugal. This proposal she rejected with scorn; and let them know, that, however her dastardly subjects might submissively and shamefully behave towards them, their queen disdained subjection to any foreign power.

31
Refuses to become tributary to them.

32
They set up a king.

On this haughty answer the Portuguese, to mortify her still more, set up a king in her place. The person they pitched upon was named *Angola Oarij*, or *Aaru*, who was of the royal family. Before he was crowned, the Portuguese obliged him to turn Christian; and he was accordingly baptized by the name of John.

The new king, however, soon died of grief, at seeing himself so hardly treated by his masters the Portuguese. They quickly set up another, named *Philip*; who bore the yoke with more patience, and lived to the year 1660.

Angola.

In the mean time Zingha, exasperated at seeing herself deprived of eleven of the best provinces in her dominions, and her authority in the remaining six greatly weakened, renounced the Christian religion, and embraced all the horrid and bloody customs of the Giagas, whom she outdid even in their own barbarity. —We have already hinted the barbarity of this nation in eating human flesh. In this Zingha not only joined them, but took pleasure in devouring the raw flesh of human victims, and drinking the blood while warm both at her sacrifices and at her public meals. —She affected a martial and heroic spirit, together with an utter aversion to the male sex; but, according to the Portuguese, maintained a number of the strongest and lustiest youths, in whose embraces she gave a full scope to her inclinations, and managed matters with such secrecy that her intrigues could never be discovered. At the same time she ordered many of her own sex to be ripped up, when their incontinency was manifested by their pregnancy; and their bodies, with those of the infants, to be cast to wild beasts.

33
Zingha's apostacy and horrid barbarity.

But what made her most admired, as well as dreaded, by her subjects, was a notion that she had by various stratagems inculcated upon them, of her being able to penetrate into the most secret thoughts. To keep up this apprehension, she ordered the bones of her deceased brother to be brought from the island where he was poisoned, locked up in a chest covered with coarse plates of silver, and laid on a fine carpet upon a pedestal. A number of singhillos or priests were ordered to offer sacrifices to these bones, and to keep lamps continually burning before them. To this place she herself frequently repaired, to assist at those rites, which, as she gave out, and every body believed, engaged the spirit of the deceased to inform her of every thing that was done, said, or even designed, either in the kingdom or out of it. —To procure, however, as much real intelligence as possible, she kept vast numbers of spies all over the kingdom, who constantly gave her notice of what happened in their respective circles; and this she so cunningly improved to her own ends, that her subjects looked upon her as a kind of deity from whom nothing could be concealed.

By such means as these, Zingha gained such authority over the Giagas, that they were ready, at the very first indication of her will, to follow her through the most dreadful dangers, and to engage in the most desperate enterprizes. She now made many strenuous and daring efforts to drive out the Portuguese; but though she had, in all probability, more valour and skill than her enemies, the fire-arms gave them such an advantage, that she was always defeated with great loss. Perceiving therefore the folly of attempts of this kind, she contented herself with making continual inroads into their country, carrying off or destroying every thing that fell in her way. Though she spared neither Europeans, nor blacks, who were subjects of the mock-monarchs set up by the Portuguese, yet the case of the former was peculiarly dreadful when they happened to be taken prisoners. They were either roasted

34
Her influence over the Giagas.

35
Her terrible ravages.

Angola.
† See *Abyssinia*.

by a slow fire, or had their flesh cut off in pieces, and devoured before their faces, in the manner related by Mr Bruce of the Abyssinian oxen*. In this manner she infested the Portuguese territories for 28 years, scarce ever allowing them a moment's cessation of arms. Their mock-kings were often obliged to shelter themselves from her fury in an inaccessible rock called *Maopongo*; and they themselves could never hope to enjoy their dominions with any kind of peace so long as this furious queen continued alive. They in vain exhausted all their politics either to reduce her by force, or to mollify her by presents and fair offers. The one she rejected with disdain, and always found means to baffle the other. Nor would she hearken to any terms, unless they consented to resign all their conquests. The refusal of this demand was so commonly followed by some marks of her resentment, that it was with the utmost difficulty the Portuguese could prevail on any body to carry their proposals to her; and as for Zingha, she disdained to make any to them, except those of the hostile kind. The terror of her arms procured her a free passage wherever she directed her course; all the inhabitants of a province making no less haste to abandon, than she to invade it. Thus she continued to advance, till at length she was got so far as the small island of Dangii in the river Coanza. The Portuguese now found themselves under a necessity of raising an army of negroes, in order to drive her out of it. Accordingly they surrounded the island, and intrenched themselves along the banks on both sides of the river; but while they were busy at their work, Zingha attacked them with such advantage, that she killed and wounded several hundreds of the blacks, and some of the white men. Elated with this advantage, she was preparing for another attack; when she perceived, to her surprise, that the Portuguese had drawn their lines so close, and raised them to such a height, that they overlooked her whole camp, and could fire upon her naked soldiers as if they shot at a mark.— Thus great numbers of her men were cut off, particularly her chief officers. The queen, now perceiving the danger of her situation, amused the Portuguese with proposals of an accommodation; and having obtained a truce for three days, crossed the river in the dead of the night, and led her forces to the province of Oacco. The next morning, the Portuguese, seeing no human creature upon the island, began to apprehend some new stratagem; but, upon landing some of their troops, they perceived themselves over-reached, and deprived of the fairest opportunity they ever had of forcing her to surrender at discretion.

36
Outwits the Portuguese.

37
Her complicated misfortunes.

Zingha staid no longer in the province whither she had retired, than till she was assured that the Portuguese were retired from the Coanza; and then, crossing that river once more, marched directly towards the kingdom of Metamba, which had been invaded by some of the neighbouring princes. The speed with which she led her forces hither, and recruited her army with multitudes of Giagas, who were all emulous of fighting under her banner, quickly enabled her to recover some of her territories in that kingdom. Beginning now to think herself successful, she again attacked the Portuguese; but was defeated with great loss, so as to be obliged to send for fresh troops. To complete her misfortune, she received news that the Giaga Cas-

fangi had taken the advantage of her absence, to enter the kingdom of Metamba with a numerous army, had carried off the greatest part of the inhabitants, destroyed all the fruits of the earth, plundered the towns of all that was valuable, and set fire to the rest, leaving that kingdom in a manner desolate. To add to all this, her troops, exasperated at the loss of their wives, children, and goods, which were carried to the farthest corner of Benguela, were all on the point of revolting.

Notwithstanding these disasters, Zingha behaved with such resolution and address, that the Portuguese, who, according to character, had probably instigated the Giaga against her, were so much afraid of her joining with him in alliance against them, that they dispatched one Anthony Coglio, a learned priest and an excellent negociator, with Don Gaspar Borgia an eminent officer, under pretence of negotiating a peace between them, first to the Giaga, and afterwards to the queen. They met with a very civil reception from the first, who told them that he was very willing to live at peace with that princess, and even to let her enjoy the kingdom of Metamba, though he was the rightful heir to it, provided she would lay down her arms. This answer encouraged the priest to try whether he could prevail on him to embrace the Christian religion; but this was declined by the Giaga in such strong terms, that the priest thought proper to desist, and set out for Zingha's camp.

38
The Portuguese send an embassy to her.

The ambassadors, at their first arrival, met with such a polite reception, as made them hope for success; but after she had heard their proposals, she assumed a haughty threatening tone, and told them in the conclusion of her speech, "That it did not become her dignity to lay down her arms, till she had brought the war she had begun to an honourable conclusion; that as to the Giagas, whose sect she had embraced some years before, and who had furnished her with such a prodigious number of forces to fight in her defence, her honour and interest required that she should still keep them in her service, and under her protection: and lastly, that as to herself, she remembered, indeed, that she had formerly embraced Christianity; but that it was not now a proper season to propose her returning to it, and they ought to remember that they themselves were the cause of her abandoning it."

39
Their proposals rejected.

Borgia, perceiving that she was not to be wrought upon by religious motives, shifted the topic; and told her, that she had gained honour enough in war, and that it was now high time to think of granting peace and tranquillity to the subjects of two such powerful kingdoms, and accept of the favour and friendship of the king of Portugal, which was offered her by his viceroy. To this the queen made answer, that she was perfectly well acquainted with the valour and strength of the Portuguese, and should esteem it an honour to be allied to that monarch; but that she thought it just that their respective claims to the dominions which she justly inherited from her ancestors, and of which he had unjustly deprived her, should first of all be decided, either by the sword or by some equitable judges.

Borgia, vainly imagining that he had now obtained enough, set off immediately for Loanda San Paulo; but left the priest, on some pretence or other, to see whether, in the time of sickness, he could make any im-

Angola.

³⁹ Angola. impression on the inflexible mind of Zingha, who now laboured under a lingering disease. Coglio, however, found all his arts to no purpose; and, upon the queen's recovery, she recommenced the war with more fury than ever.

⁴⁰ Zingha's narrow escape. For some time hostilities were carried on with various success; Zingha being sometimes victorious and sometimes defeated. In one attempt of the latter kind, before the fortress of Massangana, she not only lost a great number of men, but had her two sisters Cambi and Fungi taken prisoners, she herself escaping with the utmost difficulty. Exasperated by this loss, she led her troops into some of the best provinces of the Portuguese, and reduced them to a mere wilderness. Still, however, she had the mortification to find her losses vastly greater than what she gained; and had now the additional misfortune of losing her sister Fungi, who was put to death by the Portuguese for treachery, and seeing her allies the Dutch totally expelled out of Angola.

⁴¹ Begins to relent; Zingha being thus oppressed with a complication of misfortunes, and conscious of the crimes she had committed, began seriously to consider whether such a continued series of disasters was not owing to the displeasure of the God of the Christians. To this opinion she seemed to have inclined; and therefore began to treat with more lenity such Christians as fell into her hands, especially if they happened to be priests or monks. To these she now began to listen with some attention; and ordered them, under severe penalties, to be treated with all possible respect; yet without losing in the least that invincible hatred she had conceived against those who had stripped her of her dominions, or dropping her resolution never to make peace till she had recovered them.

⁴² But still resists the artifices of the Portuguese. The viceroy, Don Salvador Correa, who had driven out the Dutch, being apprised of the regard shown to the clergy by Queen Zingha, thought proper to send some capuchins to her, in hopes that they might now find her more tractable. But Zingha was still proof against their utmost art; observing, however, that if they would consent to restore what they had unjustly taken from her, she would not only return to the Christian religion, but encourage it to the utmost of her power.

The viceroy, being now afraid that Zingha might make an alliance against him with the king of Congo, first raised a powerful army, and then acquainted that monarch, that, if he designed to prevent the total ruin of his dominions, he must immediately make reparation for all the damage he had caused to the Portuguese by his alliance with the Dutch. The fame of the Portuguese valour so intimidated the king, that he submitted to a treaty almost on the viceroy's own terms; and as soon as this treaty was concluded, Don Ruy Pegado, an old experienced officer, was dispatched to Zingha, offering a firm and lasting alliance with her, provided she renounced the Giagan sect, and returned to the bosom of the church. To this embassy she returned the old answer, namely, that the Portuguese themselves had been the occasion of all that had happened; as they had not only stripped her of her hereditary dominions, but dared to proclaim one of her vassals king of Angola; but, provided these dominions were restored, she would immediately embrace Christianity.

All this time the furious Queen Zingha went on with her ravages, notwithstanding the viceroy kept plying her with letters for near three years. At last he had recourse to the artifice of taking advantage of the remorse for her crimes with which Zingha was sometimes affected, in order to procure the peaceable enjoyment of his own ill-gotten conquests.

It is easy to see, that had this viceroy, or the priests he employed, really intended to convert Zingha to Christianity, they ought to have so far set her an example, as at least to abandon part of the countries of which they had robbed her: But, instead of this, they impiously made use of the sacred name of our Saviour, in order to deter a poor savage African from recovering what justly belonged to her.

⁴³ Their infamous conduct. Queen Zingha, at last, came to incline so much to return to the Christian religion, that a general murder ran through her army. But having, by various artifices, reconciled the minds of her subjects to this event, she explained her design in a set speech; offering at the same time liberty to those who chose to abandon her on this account to go where they would; and such was their attachment to her, that even in such a sudden and important change in her resolutions they expressed no uneasiness, but on the contrary applauded her to the highest degree.

⁴⁴ She returns to Christianity. The Portuguese, after having been harassed in a terrible manner for 28 years, and at last obliged to profane the name of their Saviour to procure a peace, began now freely to enjoy the fruits of their villany. A treaty was set on foot between the viceroy and Zingha; which, however, was not easily concluded. She demanded the release of her sister Cambi, whose Christian name was Donna Barbara; and the Portuguese demanded a ransom of 200 slaves, or an equivalent in money. This Zingha did not well relish; and, being pressed to a compliance, threatened them with a more furious war than any they had yet experienced. Upon this the viceroy was obliged to have recourse to the usual method of sending priests to persuade her to comply through motives of religion. These hypocrites effected their purpose; and the slaves were sent, as if Christianity required the delivering up innocent people to those who had no lawful authority over them: but not being able to conclude a lasting peace about the cession of the Angolic provinces, they were forced to conclude a short truce, and sent back her sister.

⁴⁵ Treaty with the Portuguese proposed. This princess was received by Zingha in a very affectionate manner: and, some time after, the queen, her mind being probably weakened through the infirmities of old age, not only was thoroughly reconciled to the Portuguese, but looked upon them as her best friends. She encouraged the Christian religion; had a church built in her capital; made several laws against Paganism; and, to encourage marriage, she herself wedded a handsome young fellow in the 75th year of her age.

The Portuguese now imagining they would at last gain their point, proposed to her the following terms, as the basis of a lasting treaty between the two nations.

1. "That they should yield to her, as a present, some of the countries of which they had already robbed her."
2. That, in consideration of the said present, which should in no ways be interpreted as an investiture, the queen should pay yearly a certain acknowledgment to the

Angola's
43
Their infamous conduct.

44
She returns to Christianity.

45
Treaty with the Portuguese proposed.

46
The Portuguese terms.

Angola.

the king of Portugal, who should be at liberty to withdraw the said present whenever she failed of making the said acknowledgment. 3. That a free commerce should be opened between those two states, as well for slaves as for other merchandizes. 4. That the queen should molest none of the lords that were feudatory to the Portuguese, whatever damages and ravages they might have committed during the late wars between them. 5. That she should restore all the Portuguese slaves that had taken refuge in her dominions. 6. That she should deliver up the Giaga Colanda, who had revolted from the Portuguese, upon condition that his crime should go unpunished."

47
The queen's
noble an-
swer.

The queen, having now a thorough view of the deep-rooted villany of those with whom she had to do, conceived such displeasure against the Portuguese, that she fell sick. During this sickness, father Anthony, her chief confidant, and a creature of the viceroy, never left off soliciting her to make her peace with God, and to accept of the terms offered her by the Portuguese: but Zingha, though worn out with age and sickness, had still the good sense to perceive, that there was no connection between making her peace with God and complying with such infamous terms; and therefore gave the following answer, which under such circumstances, shows a magnanimity scarce equalled in any age or in any country. 1. "That as to her conversion, as it was neither owing to any desire of obtaining a peace, or other worldly motives, but the Divine Grace by which she was recalled, she was resolved to persevere in it to her last breath. 2. That as to her going over to the Giagan sect, she had in a great measure been forced to it by the Portuguese viceroy. 3. That the king of Portugal would do a generous act in restoring some of her Angolic dominions; but it would be more so, were he to restore them all. 4. That as to her paying homage to him, neither her mind nor heart were base enough to consent to it; and that as she had refused the proposal while she lived among the Giagas, much more did she think herself above it now she was a Christian queen, and owed neither tribute nor homage to any but to the Supreme Power, from whom she had received both her being and her kingdom: That, nevertheless, if she could be convinced that there was any thing in her dominions that would be acceptable to his Portuguese majesty, she would voluntarily make him a present of it; and as to the rest of the articles, such was her desire of making a firm and lasting peace with them, that she should make no difficulty of consenting to them."

48
Articles of
the treaty.

This answer was not altogether satisfactory to the viceroy; but the priest, finding it impossible to make any impression upon her mind, easily prevailed upon him to consent to the following terms. 1. "That the river Lucalla should be the boundary between the dominions of the Portuguese and of Queen Zingha. 2. That neither side should thenceforth give any reception to the fugitive slaves of the other, but send them back without any delay, together with the prisoners which had been taken during the last war. 3. That the queen should remain wholly free and exempt from all tribute and homage whatever, provided she agreed to the other articles."

49
The peace
signed.

These terms were at last signed by the queen and viceroy in the month of April 1657, and ratified by

the king of Portugal in the month of November the same year.—The only difficulty the queen had concerning this treaty was with regard to the Giaga Colanda: and the manner in which she extricated herself from it, with her subsequent behaviour, cannot fail to give us an high idea of the mental abilities of this African heroine.

This Giagan chief, weary of the Portuguese yoke, had retired from them, at the head of 1000 stout soldiers, and a much greater number of slaves, some leagues beyond the river Lucalla, and put himself under the queen's protection. This she readily granted, as he was very able to be serviceable to her in case the perfidious conduct of the Portuguese should oblige her to renew the war. She could not therefore but look upon it as unjust and dishonourable, to deliver up a brave chief who had devoted himself to her service, and whom she had taken under her special protection, to a nation with whose perfidy she was so well acquainted. To save her honour, therefore, some time before the ratification of the treaty, she sent privately for the Giaga, and acquainted him with the demand of the Portuguese; telling him, at the same time, that though she doubted not of the viceroy's keeping his word, and forgiving his offence, yet she advised him to go out of her dominions, and settle himself and his men in some distant country from the Portuguese frontiers; but forbade him, on pain of her highest displeasure, to commit the least outrage or hostility within their dominions.

The Giaga thanked her majesty, and seemed to acquiesce with her advice, but did not follow it. On the contrary, he had no sooner reached his fortress, than he set himself about fortifying it in such a manner as looked rather like defiance than defence: and, having gathered a considerable army, soon spread a general terror around him. Of this the Portuguese failed not to complain to the queen; who immediately marched against him, surprised and defeated his army; and he himself being killed in the action, his head was cut off and sent to the Portuguese.

51
Defeats and
kills the Gi-
aga Colan-
da.

This was among the last memorable actions performed by this famous queen; who, now finding herself unfit for the fatigues of war, contented herself (in 1658) with dispatching an old experienced general against a neighbouring prince who had invaded her territories. He proved no less successful than herself, and quickly forced the aggressor to submit to her terms. She now gave herself up to study the best method of propagating Christianity among her subjects; and for this purpose sent a solemn embassy to Rome, to pay homage to the Pope in her name, and to request a fresh supply of missionaries. To this letter she received an answer from his Holiness in 1662; and it was read in the church, that same year, in the most public and solemn manner. The day appointed was the 15th of July; on which she repaired to the church at the head of a numerous retinue, and having the letter hanging about her neck in a purse made of cloth of gold. The concourse was so great, that the church could not contain one half of the people, so that none were admitted but persons of rank. The father having finished the mass, read the letter at the altar in the Portuguese language; and the secretary interpreted it in that of the country. The queen, who had stood all the while it was reading, went towards the

52
Encourages
Christiani-
ty.

Angola.

Angola. the altar, and on her knees received it from the father: and having kissed it, and sworn afresh upon the gospel to continue in obedience to the church of Rome, **53** **Ceremonies** kissed the letter again, put it into the purse, and returned to the palace amidst the shouts and acclamations of many thousands of her subjects. On that day she gave a magnificent treat to the Portuguese resident, and to all her court, in two great porticos, and she herself vouchsafed to eat after the European manner; that is, sitting on a stately elbow chair, with a high table before her, covered with the finest linen, and with dishes, plates, knives, and forks, all of silver gilt. She bestowed some largesses upon her chief officers, released a good number of slaves, and at night appeared at the head of her ladies of honour, both she and they dressed in the Amazonian manner. They performed a kind of combat, in which the queen, though upwards of eighty years of age, behaved with the great vigour and activity of a woman of thirty.

54 **Zingha dies** Her life, however, was not lengthened in proportion to her vigour and activity: for in the month of September she was seized with an inflammation in her throat; which, in December, having seized her breast and lungs, she expired on the 17th of that month, and was succeeded by her sister Barbara.

55 **Succeeded by her sister Barbara.** The deceased queen was buried with extraordinary pomp; and, out of regard to her, Barbara was inaugurated a second and third time, with the greatest pomp, and the most joyful acclamations.—She was a very zealous Christian, but wanted her sister's abilities, and had the misfortune of being in the decline of life, lame, and almost blind. Besides this, she had been married to a proud ill-natured husband, named Mona Zingha; who, though to her he owed all his fortune and advancement, being himself no more than the son of a slave, used her with such cruelty, even in the late queen's life, that she was obliged to take refuge in the palace, from whence he had the insolence immediately to fetch her. This so exasperated queen Zingha, that she had well nigh ordered him to be cut in pieces before her face; but pardoned him at the request of father Anthony, who probably knew he was privy to some religious secrets which he might, in case of such emergency, have disclosed. On Barbara's accession to the throne, however, he not only redoubled his cruelty to her, in hopes of getting the management of affairs entirely into his own hands, but invented accusations against Anthony himself, with a design to extirpate both him and his religion. He gave out that the late queen had been poisoned by some favourite European dishes, with which brother Ignatio used to regale her during her last illness; and attributed his wife's lameness and blindness to some sorceries or charms used by the convent against her. He had even persuaded, or rather forced, his queen to consent that some of the singhillos or priests should be brought to counter-charm her distemper.

56 **Cruelty of her husband Mona Zingha to her.** **57** **He accuses Father Anthony.** Father Anthony, far from being intimidated at the accusations brought against him, repaired immediately to the palace; where he boldly reprimanded the queen for giving ear to these jugglers, threatening at the same time to leave her dominions, and carry off with him all the crosses, and other religious utensils, from which alone they could have any benefit. The queen returned a very submissive answer; and promised to deliver up

58 **Who reprimands the Queen.** the counter-charms which she at that time had upon her, before sunset; which she accordingly did, and sent them to the convent by the hands of her secretary. This so exasperated her husband, and all the Giagan sect, that they resolved upon the destruction of all the priests and Europeans, and even the queen herself. This, however, was found improper to be attempted; and Mona Zingha was so much chagrined at his disappointment, that he retired to his own estate; giving out, that he designed to meddle no more with state-affairs; but, in reality, to concert measures for engrossing the sovereignty to himself, and to deprive his wife of her life and crown.

To accomplish his purpose, he sent a messenger to her, desiring her to repair to his house, where he had something of importance to communicate; but she declining the invitation by the advice of father Anthony, he found himself disappointed, and begged leave to retire to a neighbouring province, which was under his government. He was again disappointed, and forbid to stir out of the province of Metamba. The queen was, however, guilty of an error not long after, in sending Mona Zingha, at the head of an army, to quell a revolt on the frontiers. On his returning victorious, he thought himself strong enough to revive the ancient Giagan rites, and therefore ordered 100 slaves to be sacrificed to the manes of the deceased queen. Though the queen was immediately apprised of his intention, and dispatched a messenger expressly commanding him to desist; yet Mona, by distributing some presents, particularly some European wines, among the counsellors, effected his purpose with impunity. He did not forget to send some of this wine to father Anthony: but to prevent suspicion, presented him only with a small quantity, to be used, as he said, at the mass; adding, that if it proved agreeable, he would supply him with a larger quantity. The unsuspecting priest drank about two glasses of it; and in about a quarter of an hour was seized with violent convulsions in his bowels, and other symptoms of being poisoned. By proper assistance, however, he recovered: yet so far was he disabled by this dose, that he was obliged to abandon his mission.

The queen's infirmities in the mean time daily increasing, Mona Zingha was soon delivered from all further opposition on her part, by her death, which happened on the 24th of March 1666. Upon this, Mona Zingha made all possible haste to get himself elected king; and immediately renounced the Christian religion, raising a persecution at the same time against its professors. He even wrote to the Portuguese viceroy, acquainting him with his having renounced Christianity, which he had only embraced out of complaisance to his queen, and with his design to revive the Giagan rites. To show that he meant to be as good as his word, he ordered all the children under six years of age, that could be found, to be sacrificed in honour of their infernal deities. He also recalled the singhillos, and heaped many favours upon them; so that they became entirely devoted to his purposes. He likewise caused many of his subjects to be privately poisoned; and then gave out, that their unaccountable deaths were owing to their having abandoned the religion of their ancestors, and embraced Christianity; which he styled the religion of a parcel of famished strangers, who through their extreme misery, had been forced to leave their native coun-

59 **Mona Zingha revives the Giagan rites;** **60** **And poisons Father Anthony.** **61** **The Queen dies.** **62** **Cruelties of Mona Zingha.**

Angola. try, and seek for a livelihood in the richest provinces of Africa.

By these and such like stratagems he almost entirely extirpated Christianity, and any appearances of civilization which had been introduced among his subjects. His career, however, was stopped by Don John the prince's Barbara's first husband, from whom she had been divorced on account of his having another wife. He soon compelled the usurper to fly into an island in the Coanza; but not having the precaution to reduce him entirely, Mona Zingha found means to retrieve his affairs, and at last defeated and killed Don John himself, by which he became master of the throne without any further opposition. He was no sooner re-established, than he began to pursue his butcheries with more fury than ever: when on a sudden, Don Francisco, the son of Don John, appeared at the head of an army in opposition to the usurper; and in the first engagement Mona Zingha being defeated and killed, Don Francisco became sole master of the empire.

63
He is de-
feated and
killed.

64
Low state of
the kings
set up by
the Portu-
guese.

It is not known whether this prince kept to the terms of the alliance made by Queen Zingha with the Portuguese or not. These, however, have preserved their conquests, and for some time they allowed the natives to choose a king for themselves, or rather they chose him for them, as we have already noticed. These kings enjoyed only a mere shadow of royalty; their whole grandeur consisting in being allowed to breed peacocks, and adorn themselves with their feathers, which was forbidden to their subjects under pain of perpetual slavery.—The last of these kings was named Ngola Sedesio, who, disliking an empty name of royalty, revolted from the Portuguese, and carried on a long war with them; but being at last defeated and killed, his head was cut off, salted, and sent to Lisbon in pickle. After this the Portuguese seem not to have thought it safe to trust their Angolic subjects even with the name of a king of their own, but have vested the power entirely in their viceroy; but as to the extent of his dominions, and how matters stand between him and that race of Angolic princes who have preserved their liberty, we are entirely in the dark.

65
Division
into pro-
vinces.

When in its greatest splendor, the kingdom of Angola contained the 17 following provinces: Chessama, Sumbi, Benguela, Rimba, Sietta, High and Low Bembea, Temba, Oacô, Cabezzo, Lubolo, Loanda, Bengo, Danda, Mosiche, Higher and Lower Ilamba, Oraj, and Embacca. The provinces conquered by the Portuguese during the wars above mentioned were, Danda, Mosiche, Bengo, the Higher and Lower Ilamba, Oraj, Embacca, Benguela, Sietta, Cabezzo, Lubolo, and Oacô.

Rivers.

The principal rivers are those already mentioned, viz. the Danda and Coanza. The Coanza is large, deep, and rapid. It empties itself into the Atlantic ocean about Latitude 9° 20' S. twelve leagues south of Loando the capital of the kingdom. It is navigable for 150 miles, and abounds with variety of fish. It forms several islands, has some cataracts, and one in particular which bears its name. As for its source, and the length of ground it crosses from east to west before it comes to the Portuguese settlement, it is absolutely unknown, as well as the countries through which it runs. Its mouth, which runs between the capes Pat-

merino and Lego, is above a league wide; the northern shore is the deepest, and along which the vessels sail. The fall of this river into the ocean is so rapid, that the sea appears quite muddy for two or three leagues below it. Its mouth is not easily perceived from the open sea, by reason of an island quite covered with high trees which lies just before it. The two principal islands formed by this river are called *Maffander* and *Motchiamia*. The one is six leagues long, and about two miles broad: it is very fertile in maize, millet, and some other grains, which are reaped at three different seasons of the year. It produces likewise vast quantities of manhioc, a root, of which they make a coarse kind of meal, which serves instead of bread. Here also grow great numbers of palm and other fruit trees of various kinds. The island of Motchiamia is four or five miles long, and one in breadth, mostly plain, and producing variety of roots and herbs. It likewise abounds in cattle; and there were formerly five or six Portuguese families settled upon it, who drove a considerable trade in these commodities, and likewise in slaves.

Concerning the river Danda we know little or nothing: only, that though its mouth is not about 70 or 80 miles distant from that of the Coanza, yet their distance grows so considerably wider as you penetrate further into the inlands, as to be much above twice if not thrice that space; though how much, is not exactly known.

The manners, religion, and dress, &c. of the inhabitants, are much the same with the Congoes. See CONGO.

ANGOLA Pea, or Pigeon-pea. See CYTISUS.

ANGON, in the ancient military art, a kind of javelin used by the French. They darted it at a considerable distance. The iron head of this weapon resembled a flower-de-luce. It is the opinion of some writers, that the arms of France are not flowers-de-luce, but the iron point of the angon or javelin of the ancient French.

ANGOR, among ancient physicians, a concentration of the natural heat; the consequence of which is a pain of the head, palpitation, and sadness.

ANGOT, a province or kingdom of Abyssinia, formerly rich and fertile, but almost ruined by the Gallas, a wandering nation in the internal parts of Africa, who dispossessed the Abyssinian monarchs of all that was worth possessing.

ANGOULESME, a city of France, the capital of the duchy of Angoumois, and the see of a bishop. It is seated on the top of a hill, surrounded with rocks, at the foot of which runs the river Charante. The inhabitants are said to be about 8000, and to drive a considerable trade in paper, which is their manufacture. E. Lon. 0. 10. N. Lat. 45. 39.

ANGOUMOIS, a province of France, bounded on the north by Poitou, on the east by Limousin and March, on the south by Perigord, and on the west by Saintonge. Through this province run the rivers Touvre and Charante. This last is full of excellent fish; and though it often overflows its banks, it is so far from doing any damage, that it greatly enriches the soil. The Touvre is full of trouts. The air is generally warmer than at Paris, though the country is hilly. The soil

Angola
||
Angou-
mois.

Angoura,
Angoy.

soil produces plenty of wheat, rye, oats, Spanish corn, saffron, grapes, and all sorts of fruits. Here are several iron mines, which yield a very good sort of fruit,

ANGOURA, ANGORA, or ANGORI, a city of Asia, in Anatolia, formerly called *Ancyra*, and still full of remarkable antiquities, which are so many marks of its ancient magnificence. It is at present one of the best cities in Anatolia; its streets are full of pillars and old marbles, among which are some of porphyry and jasper. The greatest part of the pillars are smooth and cylindrical; some are channelled spirally; but the most singular are oval, with plate bands before and behind from the top to the bottom of the pedestal. The houses are now made of clay, which is sometimes intermixed with fine pieces of marble. The walls of the city are low, with very mean battlements. The masonry of the walls is intermixed with pillars, architraves, capitals, and other ancient fragments, especially that of the towers and gates. The castle of Angora has a triple inclosure; and the walls are of large pieces of white marble, and a stone much like porphyry.

The basha of Angora has about 30 purses income; and there are here about 300 janizaries, under the command of a sardar. The Turks are said to be 40,000, the Armenians 4000 or 5000, and the Greeks 600. The Armenians have seven churches, besides a monastery; and the Greeks two. They breed the finest goats in the world; and their hair, which is of a dazzling white, is almost as fine as silk, and nine inches in length: it is worked into very fine stuffs, particularly camblet. All the inhabitants are employed in this manufacture. Several large caravans pass through this city to different places. E. Long. 32. 5. N. Lat. 39. 30. See ANCYRA.

ANGOY, a kingdom of Loango in Africa, bounded on the north by Cacongo, and on the south by Congo; from the former of which it is separated by the river Cabinda, and from the latter by the river Zaire. It is but of small extent; being only a vassal province of Cacongo, till the mani or prince, who had married a Portuguese's daughter, was persuaded by his father-in-law to make himself independent. This he effected at a favourable juncture, the king of Loango having but just before revolted from the king of Congo, and the king of Cacongo from the new king of Loango. The country is full of woods and thickets; and has no towns of any note, except one called Bomangoy, situated on the north banks of the Zaire, and not far from its mouth. Its chief port is Cabinda, called also *Kabenda*, or *Culenda*, situated on the mouth of a river of the same name, about five leagues north of Cape Palmerino, on the north side of the Zaire's mouth. The bay is very commodious for trade, or wooding and watering along the shore. It is flat and marshy in some places; but ascends gradually about three miles inland, and then forms itself into a ridge of hills. On the ascent of these is situated a town belonging to the father-in-law of the king above mentioned, where he constantly kept a stock of wood ready cut, to sell to foreign ships at an easy rate. From these wood-piles, south-west along the bay, lie scattered a number of fishermen's huts, on each side a small fresh-water river which falls into the bay; and thence all the water for ships is brought in casks to the mouth of the river, which is so shallow, that even at full flood it can only be entered by

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a yawl carrying a cask or two. The town stands on the round point of the bay looking to the westward; and the English have a factory on the south-west of the road.

The country round the bay is mostly barren; owing chiefly to the laziness of the inhabitants, which often occasions a scarcity of provisions. The wild beasts swarm so in the woods, that they destroy all the tame kinds; so there are no cattle bred here but hogs. From the woods in this country some monkeys have been brought away, which in shape and stature resembled the human species. Civet-cats abound here in great plenty, and parrots may be bought for three or four ordinary knives. The coasts abound so with oysters, that the sailors quickly load their boats with them; they being found lying in great heaps like small rocks. The natives follow the occupation of fishing more than any other. They fish both on the sea and in the rivers, making use of drag-nets, which have long canes fixed at equal distances, instead of corks, to show when any fish is caught. These nets are made of a peculiar kind of root, which, after being beaten, may be spun like hemp.

The dress of the inhabitants is the same with that of the Congee. They allow polygamy, and the best beloved wife hath the command of the rest; but is no less liable to be turned out, if she proves unfaithful. The ladies of the blood-royal have the privilege of choosing their husbands out of any, even the meanest rank; and have even the power of life and death over them; as likewise over their paramours, if any of them are caught tripping: but the husbands are by no means intitled to expect the same fidelity from their royal ladies. Women of the lower rank are obliged, when they receive a stranger, to admit them for a night or two into their embraces. This obliged the missionaries, who travelled through this country, to give notice of their approach to any of their houses, that none of the female sex might enter within their doors. Their religion consists chiefly in a variety of superstitious customs; such as powdering their public and domestic idols with the dust of a kind of red wood, on the first day of the moon, and paying a kind of worship to that planet. If, on that night, it happens to shine clear and bright, they cry out, "Thus may I renew my life as thou dost;" but if the air is cloudy, they imagine the moon hath lost her virtue, and pay her no respect. We do not hear of their offering any sacrifices to their idols; though they commonly consult them about the success of their enterprises, thefts, or such like. The king of Congo still styles himself sovereign of Angoy; but the king of this little state pays neither tribute nor homage to any foreign power.

ANGRA, a city of Tercera, one of the Azores; the capital, not only of that island, but of all the rest, and the residence of the governor. It is seated on the south side, near the middle of the longest diameter of the island, on the edge of the sea. The harbour is the only tolerable one in the whole island, being equally secured against storms and the efforts of an enemy. It is of the form of a crescent; the extremities of which are defended by two high rocks, that run so far into the sea as to render the entrance narrow, and easily covered by the batteries on each side. From this harbour the town is said to derive its name, the

C

word

Angoy,
Angra.

Angra
||
Anguilla.

word *Angra* signifying a creek, bay, or station for shipping; and this is the only convenient one among all the Azores. The opening of the port is from the east to the south-west; and according to Frezier, it is not above four cables-length in breadth, and not two of good bottom. Here ships may ride in great safety during the summer; but as soon as the winter begins, the storms are so furious, that the only safety for shipping is the putting to sea with all possible expedition. Happily, however, these storms are preceded by infallible signs, with which experience has made the inhabitants perfectly well acquainted. On these occasions the Pico, a high mountain in another of the Azores, is overcast with thick clouds, and grows exceedingly dark; but what they look upon as the most certain sign, is the fluttering and chirping of flocks of birds round the city for some days before the storm begins.

The town is well built and populous, is the see of a bishop, under the jurisdiction of the archbishop of Lisbon. It hath five parishes, a cathedral, four monasteries, as many nunneries, besides an inquisition and bishop's court, which extends its jurisdiction over all the Azores, Flores, and Corvo. It is surrounded by a good wall, a dry ditch of great depth and breadth, and defended by a strong castle, rendered famous by the imprisonment of king Alphonso by his brother Peter in 1668. Though most of the public and private buildings have a good appearance externally, they are but indifferently furnished within; but for this poverty the Portuguese excuse themselves, by saying, that too much furniture would prove inconvenient in so warm a climate.

At Angra are kept the royal magazines for anchors, cables, sails, and other stores for the royal navy, or occasionally for merchantmen in great distress. All maritime affairs are under the inspection of an officer called *Desembergrador*, who hath subordinate officers and pilots for conducting ships into the harbour, or to proper watering-places. The English, French, and Dutch, have each a consul residing here, though the commerce of any of these nations with the Azores is very inconsiderable.

ANGRIVARII, (Tacitus); a people of Germany, situated between the Weser and the Ems, and eastward reaching beyond the Weser, as far as the Cherusci, on which side they raised a rampart (Tacitus); to the south, having the Tubantes on the Ems, and on the Weser where it bends to the forest Bacemis; to the west, the Ems and the confines of the Bructeri; and to the north, the territory of the Angrivarii lay between the Chamavi and Ansibarii. Ptolemy places them between the Cauchi and Suevi or Catti. Supposed now to contain a part of the county of Schaumburg, the half of the bishopric or principality of Minden: to the south, the greatest part of the bishopric of Osnabrug, the north part of the county of Teclenburg, and a part of the county of Ravensberg. A trace of the name of the people still remains in the appellation *Engern*, a small town in the county of Ravensberg.

ANGUILLA, one of the West-India or Carribbee islands, lying in about 15° N. Lat. It has its name from its snake-like form; and is about ten leagues in length and three in breadth. It was first discovered by the English in 1650, when it was filled with alligators and other noxious animals; but they, finding the soil

fruitful, and proper for raising tobacco and corn, settled a colony on it, and imported live cattle, which have since multiplied exceedingly. But the colony not being settled under any public encouragement, each planter laboured for himself, and the island became a prey to every rapacious invader, which disheartened the inhabitants so much, that all industry was lost among them. Their chief suffering was from a party of wild Irish, who landed here after the revolution, and treated them worse than any of the French pirates who had attacked them before. The people of Barbadoes, and other English Carribbees, knowing the value of the soil, several of them removed to Anguilla, where they remained for many years, and even carried on a profitable trade, though without any government, either civil or ecclesiastical. In 1745, their militia, though not exceeding 100 men, defended a breast work against 1000 French who came to attack them; and at last obliged them to retire with the loss of 150 men, besides carrying off some of their arms and colours as trophies of their victory. Since that time the inhabitants have subsisted mostly by farming; though they still plant sugar, and the island is said to be capable of great improvements.

ANGUINA. See TRICOSANTHES.

ANGUILLIFORM, an appellation given by zoologists, not only to the different species of eels, but to other animals resembling them in shape.

ANGUINUM OVUM, a fabulous kind of egg, said to be produced by the saliva of a cluster of serpents, and possessed of certain magical virtues. The superstition in respect to these was very prevalent among the ancient Britons; and there still remains a strong tradition of it in Wales. The account Pliny * gives of it is as follows: "Præterea est ovorum genus in magna c. 3. Galliarum fama, omisum Græcis. Angues innumeri æstate convoluti, salivæ faucium corporumque spumæ artificii complexu glomerantur; anguinum appellatur. Druidæ sibilis id dicunt in sublime jactari, sagoque oportere intercipi, ne tellurem attingat: profugere raptorem equo: serpentes enim insequi, donec arceantur amnis alicujus interventu."—Of which the following may serve as a translation: (from *Mason's Caractacus*; the person speaking, a Druid.)

But tell me yet

From the grot of charms and spells,
Where our matron sister dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-stone*,
Gender'd 'fore the autumnal moon?
When in undulating twine,
The foaming snakes prolific join;
When they hiss and when they bear
Their wond'rous egg aloof in air:
Thence before to earth it fall,
The *Druid* in his hallow'd pall,
Receives the prize,
And instant flies,
Follow'd by the envenom'd brood,
'Till he cross the crystal flood.

This wondrous egg seems to be nothing more than a bead of glass, used by the Druids as a charm to impose on the vulgar, whom they taught to believe, that the possessor would be fortunate in all his attempts, and that it would gain him the favour of the great.

Our

Anguina.
||
Anguinum.

Anguis.

Our modern Druidesses (says Mr Pennant, from whom we extract) give much the same account of the *ovum anguinum*, *glain neidr*, as the Welsh call it, or the *adder gem*, as the Roman philosopher does; but seem not to have so exalted an opinion of its powers, using it only to assist children in cutting their teeth, or to cure the chincough, or to drive away an ague.

These beads are of a very rich blue colour; some plain, others streaked. For their figure, see Plate XXXII. fig. 22. n^o 1, 2, 3.

ANGUIS, or SNAKE, in zoology, a genus belonging to the order of amphibia serpentes. The characters of the anguis are these: They are squamous or scaly in the belly and under the tail; without any

* See Plates
XV and
XXIX.

scuta*. There are 15 species of the anguis, viz. 1. The eryx, a native of Britain and likewise of America, is about a span in length, and about the thickness of a man's finger. One from Aberdeenshire, described by Mr Pennant, was 15 inches long; tongue broad and forked; nostrils small, round, and placed near the tip of the nose; eyes lodged in oblong fissures above the angle of the mouth; belly of a bluish lead colour, marked with small white spots irregularly disposed: The rest of the body of a greyish brown, with three longitudinal dusky lines; one extending from the head along the back to the point of the tail; the others broader, and extending the whole length of the sides. It was entirely covered with small scales; largest on the upper part of the head. 2. The fragilis, blind-worm, or slow worm, grows to about a foot in length, and to the thickness of a man's little finger: the irides are red; the head is small; the neck still more slender; from that part the body grows suddenly, and continues of an equal bulk to the tail, which ends quite blunt. The colour of the back is cinerous, marked with very small lines composed of minute black specks: the sides are of a reddish cast; the belly dusky; both marked like the back. The tongue is broad and forked; the teeth are minute, but numerous; the scales small. The motion of this serpent is slow, from which, and from the smallness of the eyes, are derived its name. It resembles the viper in the manner of producing its young, which are put forth alive. It is frequent with us in gardens and pastures, where it lives principally under ground feeding on worms. Like others of the genus, they lie torpid during winter, and are sometimes found in vast quantities twisted together. 3. The ventralis, or glass-snake of Catesby, has 127 squamæ on the belly, and 223 on the tail. The head is very small, and the tongue of a singular form. The upper part of the body is of a colour blended brown and green, most regularly and elegantly spotted with yellow, the undermost part of which is brightest. The skin is very smooth; and shining with small scales, more closely connected, and of a different structure from those of other serpents. A small blow with a stick will cause the body to separate, not only at the place struck, but at two or three other places, the muscles being articulated in a singular manner quite through to the vertebra. They appear earlier in the spring than any other serpent, and are numerous in the sandy woods of Virginia and Carolina. They are generally said to be harmless. 4. The jaculus, or dart-snake, is about three hand-breadths long, and about the thickness of one's little finger. Its colour is a milky grey on the back, varie-

gated with small black spots like so many eyes; and on the belly it is perfectly white. The neck is wholly black; and from that two milk-white streaks run all the way along the back to the tail: the black spots also are each surrounded with a small circle of white. It has its name from its vibrating its body in the manner of a dart. It is a native of Egypt, Libya, and the islands of the Mediterranean. 5. The quadrupes: The body of this species is cylindrical, with 14 or 15 longitudinal ash-coloured streaks; the teeth are extremely small; it has no ears: the feet are at a great distance from each other, very short, with five toes and small nails; but the toes are so minute, that they can hardly be numbered: It is a native of Java. 6. The bipes, is a native of the Indies; it has two short feet, with two toes, near the anus. In every scale of the bipes there is a brown point. 7. The meleagris, is likewise a native of the Indies; it has small teeth, but no ears. This species has a great resemblance to the former. 8. The colubrina, an inhabitant of Egypt, is beautifully variegated with pale and yellow colours. 9. The maculata, a native of America, is yellow, and interspersed with ash-coloured lines on the back: the head is small in proportion to the body. 10. The reticulata, a native of America, has brownish scales, with a white margin. 11. The cerasites, with 200 squamæ on the belly and 15 on the tail, is a native of Egypt. 12. The lumbricalis, a native of America, has 230 squamæ on the belly and 7 on the tail; its colour is a yellowish white. 13. The platyura: The head is oblong and without teeth; the body is about a foot and a half long, black above and white below; the tail is about one-ninth of the length of the animal, much compressed or flattened, and variegated with black and white; the scales are roundish, small, not imbricated, but they cannot be numbered. 14. The laticauda, a native of Surinam: the tail is compressed, acute, pale, with brownish belts. 15. The scytale, a native of the Indies, with 220 squamæ on the belly and 13 on the tail. The head is small and oval, and the eyes are little: the body is cylindrical, about a foot and a half long, covered with oval obtuse scales: the tail is thick and obtuse like the head; its colour is white, interspersed with brownish rings; the margins of the scales are of an iron colour; and the top of the head is blue.—According to Linnæus, none of this genus are poisonous.

Anguis,
Anguria.

ANGURIA the WATER MELON: A genus of the diandria order, belonging to the monœcia class of plants; and in the natural method ranking under the 34th order, *Cucurbitaceæ*. The essential characters are these: The male calyx is quinquefid, and the corolla quinquepetalous: The female calyx and corolla the same: The pericarpium is a pome beneath, with two cells: The seeds are numerous.

Species. Of this genus, Linnæus reckons three species, the trilobata, pedata, and trifoliata; but only one is known in this country, by the name of *Citrul*. The fruit is cultivated in Spain, Portugal, Italy, and other warm countries of Europe; as also in Africa, Asia, and America; where it is esteemed on account of its wholesome cooling quality; but in Britain it is held in little estimation.

Culture. To have this fruit good, some seeds must be procured of three or four years old; new seeds being apt to produce vigorous plants, which are seldom

Angus
||
Anhalt.

so fruitful as those of a moderate strength. These are to be sown in the hot-bed for early cucumbers. Some new dung is to be prepared in the beginning of February, which should be thrown into a heap to heat, as is practised for early cucumbers. The bed is then to be made in the same manner as for the musk-melon, covering the dung about five inches thick with loamy earth; but as these plants require much more room than either cucumbers or common melons, there should be but one plant put into a three-light frame. A hill of the same loamy earth should therefore be raised a foot and a half high, in the middle light of each frame; into which, when the bed is of a proper temper for heat, the plants should be carefully planted, observing to water and shade them until they have taken good root. As to other particulars, their management differs very little from that of the musk-melon: only they must frequently have fresh air admitted to them; and when the nights are cold, the glasses must be covered with mats to keep the beds warm.

ANGUS, a district of the county of Forfar in Scotland. It was an earldom belonging to the Douglases, now extinct.

ANGUSTICLAVIA, in Roman antiquity, a tunica embroidered with little purple studs. It was worn by the Roman knights, as the laticlavia was by the senators.

ANHALT, an island of Denmark, in North Jutland, lying in the Categut, eight miles from the coast of Jutland, ten from Zealand, and seven from Holland. It is dangerous for seamen, for which reason there is a light-house.

ANHALT, a principality of Germany, in the circle of Upper Saxony, is a long narrow tract, situated for the most part betwixt the rivers Elbe and Saal, about 90 miles in length from east to west, but of unequal breadth, the greatest being on the east side, which is but 35 miles. The house of Anhalt, from whence the electors of Saxony and Brandenburg are said to derive their original, is a very ancient and honourable family. The best genealogists deduce their origin from Berenthobaldus, who made war upon the Thuringians in the sixth century: it has produced many princes who make a great figure in the German history. Joachim Ernest, who died in 1586, left five sons, who divided the principality among them. All of them having children, and being of equal authority, they unanimously agreed to submit to the eldest of the family, who has the supreme government, which is *Anhalt-Deffau*. The others are, *Anhalt-Bernburg*, *Anhalt-Schaumburg*, *Anhalt-Coethen*, and *Anhalt-Zerbst*. The Saxons acknowledge that the inhabitants of these little independent sovereignties live in the land of milk and honey. These petty princes possess lands sufficient for their expences, the revenues being reckoned about half a million of dollars. The tax on lands is four *per cent.* which, rating them at 20 years purchase, is not quite one shilling in the pound. Upon an emergency the subjects are able to raise half a million extraordinary. The towns in these little states are not so numerous in proportion to the extent of country as in Saxony, but better peopled. It is bounded on the S. by the county of Mansfield, on the W. by the duchy of Halberstadt, on the E. by the duchy of Saxony, and on the N. by the duchy of Magdeburg. It abounds in corn, and is

watered by the Salde and Mulda; its principal trade is in beer.

ANHELATIO, or ANHELITUS, among physicians, a shortness of breath.

ANIAN, the name of a strait formerly supposed to lie between the north-east of Asia and the north-west of America; but now found to exist only in imagination.

ANIAN is also the name of a barren sandy desert lying on the east coast of Africa. It is so excessively hot and otherwise inhospitable, that it contains but very few inhabitants, except some wandering Arabs who live in camps.

ANIELLO, or MASSANIELLO. See History of NAPLES.

ANJENGO, a small town and factory, with a fort, on the coast of Malabar, in the peninsula on this side the Ganges, belonging to the East India Company. The fort is small, but neat and strong: it is a square with four bastions, having eight guns mounted on each, carrying a ball of 18 pounds. Two of these bastions face the sea, the other two the country. Besides these, there is a line of 18 or 20 guns pointing towards the sea, of 18 and 24 pounders. About a pistol-shot from the back of the fort runs a river, which, besides being a security to the factory, adds much to the agreeable situation of the place. This river has its source in some distant mountains; and, descending in a course from the north and east, it afterwards turns in several pleasing meanders so far to the west as to wash the bottom of our factory's garden, and at last winding to the south, it empties itself into the sea. Several beautiful small islands too, which are washed by its current, diversify the scenery, and greatly heighten the beauty of the prospect. This settlement supplies our East-India Company with pepper: and its situation is also very convenient for giving proper intelligence to our ships touching here from Europe, or from any part of India. E. Long. 76. 1. N. Lat. 7. 0.

ANIL, in botany, a synonyme of a species of indigofera. See INDIGOFERA.

ANIMA, among divines and naturalists, denotes the soul, or principle of life, in animals. See SOUL.

ANIMA, among chemists, denotes the volatile or spirituous parts of bodies.

ANIMA Hepatis, is a name by which some call *sal martis* or *salt of iron*, on account of its supposed efficacy in diseases of the liver.

ANIMA Mundi, a certain pure ethereal substance or spirit, diffused, according to many of the ancient philosophers, through the mass of the world, informing, actuating, and uniting the divers parts thereof into one great, perfect, organical, and vital body or animal. Plato treats at large of the $\psi\upsilon\chi\eta\ \tau\upsilon\ \kappa\omicron\sigma\mu\upsilon$; in his *Timæus*; and is even supposed to be the author of the *dogma*; yet are interpreters much at a loss about his meaning. Aristotle, however, taking it in the common and obvious sense, strenuously opposes it. The modern Platonists explain their master's *anima mundi* by a certain universal ethereal spirit, which in the heavens exists perfectly pure, as retaining its proper nature; but on earth pervading elementary bodies, and intimately mixing with all the minute atoms thereof, it assumes somewhat of their nature, and becomes of a peculiar kind.—So the poet:

Spiritus

Anhelatio
||
Anima.

Anima
||
Animal.

*Spiritus intus alit, totosque infusa per artus
Mens agitat molem, et magno se corpore miscet.*

They add, that this *anima mundi*, which more immediately resides in the celestial regions as its proper seat, moves and governs the heavens in such manner, as that the heavens themselves first received their existence from the fecundity of the same spirit; for that this *anima*, being the primary source of life, every where breathed a spirit like itself, by virtue whereof various kinds of things were framed conformable to the divine ideas.

ANIMA Saturni, a white powder obtained by pouring distilled vinegar on litharge, of considerable use in enamelling. See ENAMEL.

ANIMADVERSION, in matters of literature, is used to signify, sometimes correction, sometimes remarks upon a book, &c. and sometimes a serious consideration upon any point.

ANIMAL, in natural history, an organized and living body, which is also endowed with sensation: thus, minerals are said to grow or increase, plants to grow and live, but animals alone to have sensation.

It is this property of sensation alone that can be deemed the essential characteristic of an animal; and by which the animal and vegetable kingdoms seem to be so essentially separated, that we cannot even imagine the least approximation of the one to the other. Those naturalists, indeed, who have supposed the distinction between animals and vegetables to consist in any thing else than what we have already mentioned, have found themselves greatly embarrassed; and have generally agreed, that it was extremely difficult, if not impossible, to settle the boundaries between the animal and vegetable kingdoms. But this difficulty will be easily seen to arise from their taking the characteristic marks of the animal kingdom, from something that was evidently common to both. Thus Boerhaave attempted to distinguish an animal from a vegetable, by the former having a mouth, which the latter has not: but here, as the mouth of an animal is only the instrument by which nourishment is conveyed to its body, it is evident that this can be no essential distinction, because vegetables also require nourishment, and have instruments proper for conveying it into their bodies: and where the end is the same, a difference in the means can never be essential. The fixing the difference in an animal's having a gullet, stomach, and intestines, as is done by Dr Tyson, is as little to the purpose.

The power of moving from one place to another, hath by many been thought to constitute their difference; and indeed, in most cases, it is the obvious mark by which we distinguish an animal from a vegetable: but Lord Kames hath given several very curious instances of the locomotive power of plants; some of which, as he says, would do honour to an animal.—“Upon the slightest touch, the sensitive plant shrinks back and folds up its leaves, similar to a snail; which on the slightest touch retires within its shell. A new species of the sensitive plant hath been lately discovered. See DIONÆA. If a fly perch upon one of its flower-leaves, it closes instantly, and crushes the insect to death. There is not an article in botany more admirable than a contrivance, visible in many plants, to take advantage of good weather, and to protect themselves against bad. They open and close their flowers and leaves in

different circumstances; some close before sunset, some after: some open to receive rain, some close to avoid it. The petals of many flowers expand in the sun; but contract at night, or on the approach of rain. After the seeds are fecundated, the petals no longer contract. All the trefoils may serve as a barometer to the husbandman; they always contract their leaves on an impending storm. Some plants follow the sun, others turn from it. Many plants, on the sun's recess, vary the position of their leaves, which is styled the *sleep of plants*. A singular plant † was lately discovered in Bengal. Its leaves are in continual motion all day long: but when night approaches, they fall down from an erect posture to rest.

Animal.

† A species of the *Hedyotis*. See that article.

“A plant has a power of directing its roots for procuring food. The red whortle-berry, a low evergreen plant, grows naturally on the tops of our highest hills, among stones and gravel. This shrub was planted in an edging to a rich border, under a fruit-wall. In two or three years, it over-ran the adjoining deep-laid gravel-walk; and seemed to fly from the border, in which not a single runner appeared. An effort to come at food in a bad situation, is extremely remarkable in the following instance. Among the ruins of Newabbey, formerly a monastery in Galloway, there grows on the top of a wall a plane-tree about 20 feet high. Straitened for nourishment in that barren situation, it several years ago directed roots down the side of the wall, till they reached the ground ten feet below; and now the nourishment it afforded to those roots during the time of their descending is amply repaid, having every year since that time made vigorous shoots. From the top of the wall to the surface of the earth, these roots have not thrown out a single fibre; but are now united in a single root.

“Plants, when forced from their natural position, are endowed with a power to restore themselves. A hop-plant, twisting round a stick, directs its course from south to west, as the sun does. Untwist it, and tie it in the opposite direction: it dies. Leave it loose in the wrong direction: it recovers its natural direction in a single night. Twist a branch of a tree so as to invert its leaves, and fix it in that position: if left in any degree loose, it untwists itself gradually, till the leaves be restored to their natural position. What better can an animal do for its welfare? A root of a tree meeting with a ditch in its progress, is laid open to the air. What follows? It alters its course like a rational being, dips into the ground, surrounds the ditch, rises on the opposite side to its wonted distance from the surface, and then proceeds in its original direction. Lay a wet sponge near a root laid open to the air; the root will direct its course to the sponge. Change the place of the sponge; the root varies its direction. Thrust a pole into the ground at a moderate distance from a scandent plant: the plant directs its course to the pole, lays hold of it, and rises on it to its natural height. A honeysuckle proceeds in its course, till it be too long for supporting its weight; and then strengthens itself by shooting into a spiral. If it meet with another plant of the same kind, they coalesce for mutual support; the one screwing to the right, the other to the left. If a honeysuckle twig meets with a dead branch, it screws from the right to the left. The claspers of briony shoot into a spiral, and lay hold of whatever comes in their way for

Animal. for support. If, after completing a spiral of three rounds, they meet with nothing, they try again by altering their course."—

By comparing these and other instances of seeming voluntary motion in plants, with that share of life where-with some of the inferior kinds of animals are endowed, we can scarce hesitate at ascribing the superiority to the former; that is, putting sensation out of the question. Muscles, for instance, are fixed to one place as much as plants are; nor have they any power of motion, besides that of opening and shutting their shells: and in this respect they have no superiority over the motion of the sensitive plant: nor doth their action discover more sagacity, or even so much, as the roots of the plane-tree mentioned by Lord Kames.

Mr Buffon, who seems to be desirous of confounding the animal and vegetable kingdoms, denies sensation to be any essential distinction. "Sensation (says he) more essentially distinguishes animals from vegetables: but sensation is a complex idea, and requires some explication. For if sensation implied no more than motion consequent upon a stroke or an impulse, the sensitive plant enjoys this power. But if, by sensation, we mean the faculty of perceiving and comparing ideas, it is uncertain whether brute animals are endowed with it. If it should be allowed to dogs, elephants, &c. whose actions seem to proceed from motives similar to those by which men are actuated, it must be denied to many species of animals, particularly to those which appear not to possess the faculty of progressive motion. If the sensation of an oyster, for example, differed only in degree from that of a dog; why do we not ascribe the same sensation to vegetables, though in a degree still inferior? This distinction, therefore, between the animal and vegetable, is neither sufficiently general nor determined.

"From this investigation, we are led to conclude, that there is no absolute and essential distinction between the animal and vegetable kingdoms; but that nature proceeds, by imperceptible degrees, from the most perfect to the most imperfect animal, and from that to the vegetables; and the fresh-water polypus may be regarded as the last of animals and the first of plants."

It were to be wished, that philosophers would on some occasions consider, that a subject may be dark as well on account of their inability to see, as when it really affords no light. Our author boldly concludes, that there is no essential difference between a plant and an animal, because we ascribe sensation to an oyster, and none to the sensitive plant; but we ought to remember, that though we cannot perceive a distinction, it may nevertheless exist. Before Mr Buffon, therefore, had concluded in this manner, he ought to have proved that some vegetables were endowed with sensation.

It is no doubt, however, as much incumbent on those who take the contrary side of the question, to prove that vegetables are not endowed with sensation, as it was incumbent on Mr Buffon to have proved that they are. But a little attention will show us, that the difficulty here proceeds entirely from our inability to see the principle of sensation. We perceive this principle in ourselves, but no man can perceive it in another. Why then does every individual of mankind conclude, that his neighbour has the same sensations with himself? It can only be from analogy. Every man perceives his

neighbour formed in a manner similar to himself; he acts in a similar manner on similar occasions, &c. Just so it is with brute animals. It is no more doubtful that they have sensations, than that we have them ourselves. If a man is wounded with a knife, for instance, he expresses a sense of pain, and endeavours to avoid a repetition of the injury. Wound a dog in the same manner, he will also express a sense of pain; and, if you offer to strike him again, will endeavour to escape, before he feels the stroke. To conclude here, that the action of the dog proceeded from a principle different from that of the man, would be absurd and unphilosophical to the last degree.

We must further take notice, that there are sensations essentially distinct from one another; and in proportion as an animal is endowed with more or fewer of these different species it is more or less perfect as an animal: but, as long as one of them remains, it makes not the least approach to the vegetable kingdom; and, when they are all taken away, is so far from becoming a vegetable, that it is only a mass of dead matter. The senses of a perfect animal, for instance, are five in number. Take away one of them, suppose sight, he becomes then a less perfect animal; but is as unlike a vegetable as before. Suppose him next deprived of hearing, his resemblance to a vegetable would be as little as before; because a vegetable can neither feel, taste, nor smell; and we suppose him still to enjoy these three senses. Let us, lastly, suppose him endowed only with the sense of feeling, which, however, seems to include that of taste, and he is no more a vegetable than formerly, but only an imperfect animal. If this sense is then taken away, we connect him not with the vegetable kingdom, but with what Mr Buffon calls *brute-matter*. It is to this kingdom, and not to the vegetable, that animals plainly approximate as they descend. Indeed, to suppose an approximation between the vegetable and animal kingdoms, is very absurd: for, at that rate, the most imperfect animal ought to be the most perfect plant; but we observe no such thing. All animals, from the highest to the lowest, are possessed of vegetable life; and that, as far as we can perceive, in an equal degree, whether the animal life is perfect or imperfect: nor doth there seem to be the smallest connection between the highest degree of vegetation and the lowest degree of sensation. Though all animals, therefore, are possessed of vegetable life, these two seem to be as perfectly distinct and incommensurate to one another as any two things we can possibly imagine.

The power of vegetation, for instance, is as perfect in an onion or leek, as in a dog, an elephant, or a man: and yet, though you threaten a leek or an onion ever so much, it pays no regard to your words, as a dog would do; nor, though you wound it, does it avoid a second stroke. It is this principle of self-preservation in all animals, which, being the most powerful one in their nature, is generally taken, and with very good reason, as the true characteristic of animal life. This principle is undoubtedly a consequence of sensation; and as it is never observed to take place in vegetables, we have a right to say that the foundation of it, namely sensation, belongs not to them. There is no animal, which makes any motion in consequence of external impulse where danger is threatened, but what puts itself in a posture of defence; but no vegetable what-

ever

Animal. ever does so. A muscle, when it is touched, immediately shuts its shell; and as this action puts it in a state of defence, we conclude that it proceeded from the principle of self-preservation. When the sensitive plant contracts from a touch, it is no more in a state of defence than before; for whatever would have destroyed it in its expanded state, will also do it in its contracted state. We conclude, therefore, that the motion of the sensitive plant proceeds only from a certain property called by physicians *irritability*; and which, though our bodies possess it in an eminent degree, is a characteristic neither of animal nor vegetable life, but belongs to us in common with brute-matter. It is certain, that an electrified silk-thread shows a much greater variety of motions than any sensitive plant. If a bit of silk-thread is dropt on an electrified metal-plate, it immediately erects itself; spreads out the small fibres like arms; and, if not detained, will fly off. If a finger is brought near it, the thread seems greedily to catch at it. If a candle approaches, it claps close to the plate as if afraid of it.—Why do we not conclude that the thread in this case is really afraid of the candle? For this plain reason, That its seeming flight is not to get away from the candle, but to get towards the electrified metal; and, if allowed to remain there, will suffer itself to be burnt without offering to stir.—The sensitive plant, in like manner, after it has contracted, will suffer itself to be cut in pieces, without making the least effort to escape. The case is not so with the meanest animal. An hedge-hog, when alarmed, draws its body together, and expands its prickles, thereby putting itself in a posture of defence. Throw it into water, and the same principle of self-preservation prompts it to expand its body and swim. A snail, when touched, withdraws itself into its shell; but if a little quicklime is sprinkled upon it, so that its shell is no longer a place of safety, it is thrown into agonies, and endeavours to avail itself of its locomotive power in order to escape the danger. In muscles and oysters, indeed, we cannot observe this principle of self-preservation so strongly, as nature has deprived them of the power of progressive motion: but, as we observe them constantly to use the means which nature has given them for self-preservation, we can have no reason to think that they are destitute of that principle upon which it is founded.

But there is no need of arguments drawn from the inferior creation. We ourselves are possessed both of the animal and vegetable life, and certainly must know whether there is any connection between vegetation and sensation or not.—We are conscious that we exist; that we hear, see, &c.: but of our vegetation we are absolutely unconscious. We feel a pleasure, for instance, in gratifying the calls of hunger and thirst; but of the process by which our aliment is formed into chyle, the chyle mixed with the blood, the circulation of that fluid, and the separation of all the humours from it, we are altogether ignorant. If we, then, who are more perfect than other vegetables, are utterly insensible of our own vegetable life, why should we imagine that the less perfect vegetables are sensible of it?

To illustrate our reasoning here by an example.—The direction of the roots of the plane-tree mentioned by Lord Kames, shows as much sagacity, if we are to look only to the outward action, as can be observed in any motion of the most perfect animal whatever; ne-

vertheless, we have not the least suspicion, either that the tree saw the ground at a distance, or that it was informed of its being there by the rest of its roots. If a wound is made in the body of a man, and a loss of substance is to be repaired, the same sagacity will be observed in the arrangement of the fibres, not only as if they were animated, but they will dispose of themselves seemingly with a degree of wisdom far superior to what we have any idea of; yet this is done without our having the least knowledge either how it is done, or of its being done at all. We have therefore in ourselves a demonstration, that vegetable life acts without knowing what it does: and if vegetables are ignorant of their most sagacious actions, why should we suspect that they have a sensation, let it be ever so obscure, of any of their inferior ones, such as contracting from a touch, turning towards the sun, or advancing to meet a pole?

Thus we may easily give Mr Buffon a reason why we ascribe sensation to an oyster, and none to a vegetable; namely, because we perceive the vegetable do nothing but what is also performed in our own bodies, without our having the least sensation of it; whereas an oyster puts itself in a defensive posture on the approach of danger; and this being an action similar to our own upon a like occasion, we conclude that it proceeds from the same principle of sensation. Here it may also be observed, that though the inferior animals are deficient in the number, they are by no means so in the acuteness of their sensations; on the contrary, though a muscle or an oyster is probably endowed with no other sense than that of feeling, yet this sense is so exquisite, that it will contract upon the slightest touch, such as we would be altogether insensible of.

As to that power of contractility, or irritability, which is observed in some plants; our solids have it, when deprived both of vegetable and animal life: for a muscle, cut out of a living body, will continue to contract, if it is irritated by pricking it, after it has neither sensation nor vegetation.

A very good moral reason may also be adduced why we do not believe vegetables to be endowed with sensation.—Had they been so, we must suppose them to suffer pain when they are cut or destroyed; and if so, what an unhappy state must they be in, who have not the least power to avoid the injuries daily offered them? In fact, the goodness of the Deity is very conspicuous in not giving to vegetables the same sensations as to animals; and as he hath given them no means of defence, though we had not been told it by himself, we might have known that he gave them for food to animals; and, in this case, to have endowed them with sensation would have been a piece of cruelty. Tho' animals without number prey upon one another, yet all of them have some means of defence; from whence we may justly conclude, that their mutual destruction was not an original appointment of the Creator, but what he foresaw would happen in a course of time, and which he therefore gave every one of them some means of guarding against. It may no doubt be here objected, that the giving some means of self-defence to every animal cannot be reckoned a sufficient proof that it was not the original design of the Creator that they should be destroyed, seeing these means are not always effectual for their preservation.—This objection, how-

Animal.

Animal.

ever, cannot be completely obviated without a solution of the question concerning the origin of evil among the works of a perfectly good Being. But whatever difficulty there may be in solving this question, it is certain, that, as some means of self-defence is given to every animal, it has been the original design of the Creator, that in all cases one species of animals should not be destroyed at the pleasure of any other species; and as no means of self-defence is given to any vegetable, it is plain that they have been destined for a prey to every species of animals that had access to them. Philosophers have insisted much on the necessity of one animal's devouring another, that there might be room sufficient for all; but this, so far from being a system worthy of the divine wisdom, seems to us to be a reflection upon it, as if the Author of nature could not have found means to preserve the life of one part of his creatures, without the destruction and misery of the rest. The sacred writings leave us at no loss to see how this carnivorous disposition came in; and in the next world, this piece of perfection (as the sanguinary philosophers above-mentioned would have it to be) seems to be left out; for there, it is said, "They shall not hurt nor destroy; the lion shall eat straw like the ox, and there shall be no more pain."

When speaking of the food of plants, we took occasion to mention a certain power, totally different from that of attraction or repulsion, by which the food of a plant, after it was attracted, or otherwise brought to it, was assimilated to its substance. This power which we there distinguish by the name of *transmutation*, belongs in a more eminent degree to animals. The alimentary substance is changed into two kinds of matter. (1.) An excrementitious one, which passes off through the intestines; and (2.) A fluid, which is the direct pabulum of the animal. Different substances, however, are not equally changeable by this process. The human stomach is not capable of acting upon any animal substance till it has lost its vital principle: the stomachs of some animals cannot act upon creatures of their own species: some have an apparatus for grinding their food after it is swallowed, &c. and there are no animals but what are subject to death by taking certain substances into their stomach. Some substances also, though they resist the action of the stomach, and pass unchanged into the system, produce no bad effects. Thus, madder will turn the bones of animals red; rhubarb will communicate its purgative nature to the milk, and its deep yellow colour to the urine.—All these changes, however, seem to belong to the vegetative part of our system: for as every one of them are performed without our knowledge of the manner how; and not only so, but while we are absolutely unconscious of their being done; we can have no reason to suppose that the *animal* life, properly so called, is at all connected with them, any farther than as they are at present the means of preserving the creature alive, and making the connection betwixt the principle of life and this visible creation.

The description and classing of animals make a considerable part of Natural History, known by the name of *Zoology*. See the article *ZOOLOGY*.

For particulars relating to different animals, their analogous structure, sagacity, instinct, peculiarities, &c. see *COMPARATIVE Anatomy*, *INSTINCT*, *MIGRATION*,

AMPHIBIOUS, QUADRUPED, SINGING, ORNITHOLOGY, VIVIPAROUS, OVIPAROUS, ICHTHYOLOGY, ENTOMOLOGY, &c.

Animal.

ANIMAL, used adjectively, denotes any thing belonging to, or partaking of, the nature of animals. Thus, animal actions, those that are peculiar to animals; such are sensation and muscular motion.

ANIMAL-Flower, in zoology, a name given to several species of animals belonging to the genus of *ACTINIA* of Linnæus. They have likewise been distinguished by the names of *Urtica Marina*, or *Sea-nettle*, from their supposed property of stinging; and *Sea-anemone*, from their claws or tentacles being disposed in regular circles, and tinged with a variety of bright lively colours, resembling the petals of some of our most beautiful flowers. As to one species particularly, mentioned by Abbé Diequemarre (*Phil. Transf.* for 1773, art. 37.), the purest white, carmine, and ultramarine, are said to be scarce sufficient to express their brilliancy. The bodies of some of them are hemispherical, of others cylindrical, and of others shaped like a fig. Their substance likewise differs; some are stiff and gelatinous, others fleshy and muscular; but all of them are capable of altering their figure when they extend their bodies and claws in search of food. They are found on many of the rocky coasts of the West India islands, and likewise on some parts of the coast of England.

They have only one opening, which is in the centre of the uppermost part of the animal; round this are placed rows of fleshy claws; this opening is the mouth of the animal, and is capable of great extension. The animals themselves, though exceedingly voracious, will bear long fasting. They may be preserved alive a whole year, or perhaps longer, in a vessel of sea water, without any visible food; but, when food is presented, one of them will successively devour two muscles in their shells, or even swallow a whole crab as large as a hen's egg. In a day or two the crab-shell is voided at the mouth, perfectly cleared of all the meat. The muscle-shells are likewise discharged whole, with the two shells joined together, but entirely empty, so that not the least particle of fish is to be perceived on opening them. An anemone of one species will even swallow an individual of another species; but, after retaining it ten or twelve hours, will throw it up alive and uninjured. Through this opening also it produces its young ones alive, already furnished with little claws, which, as soon as they fix themselves, they begin to extend in search of food.

One of the extremities of the sea-anemone resembles, as we have said, the outward leaves of that flower; while its limbs are not unlike the shag or inner part of it. By the other extremity it fixes itself, as by a sucker, to the rocks or stones lying in the sand; but it is not totally deprived of the power of progressive motion, as it can shift its situation, though very slowly.

A particular species of animal-flowers has been found in some of the islands ceded to Britain at the last treaty of peace with France; and the following account of them was published in the *Philosophical Transactions*, vol. 57. by Mr Ellis. in a letter to Lord Hillsborough.

"This compound animal, which is of a tender fleshy substance, consists of many tubular bodies, swelling gently towards the upper part, and ending like a bulb

or

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or very small onion; on the top of each is its mouth, surrounded by one or two rows of tentacles, or claws, which when contracted look like circles of beads.

"The lower part of all these bodies have a communication with a firm fleshy wrinkled tube, which sticks fast to the rocks, and sends forth other fleshy tubes, which creep along them in various directions. These are full of different sizes of, these remarkable animals, which rise up irregularly in groups near to one another.

"This adhering tube, that secures them fast to the rock, or shelly bottom, is worthy of our notice. The knobs that we observe, are formed into several parts of it by its insinuating itself into the inequalities of the coral rock, or by grasping pieces of shells, part of which still remain in it, with the fleshy substance grown over them.

"This shows us the instinct of nature, that directs these animals to preserve themselves from the violence of the waves, not unlike the anchoring of muscles, by their fine silken filaments that end in suckers; or rather like the shelly basis of the serpula, or worm-shell, the tree-oyster, and the slipper barnacle, &c. whose bases conform to the shape of whatever substance they fix themselves to, grasping it fast with their testaceous claws, to withstand the fury of a storm.

"When we view the inside of this animal dissected lengthwise, we find like a little tube leading from the mouth to the stomach, from whence their rise eight wrinkled small guts, in a circular order, with a yellowish soft substance in them; these bend over in the form of arches towards the lower part of the bulb, from whence they may be traced downwards, to the narrow part of the upright tube, till they come to the fleshy adhering tube, where some of them may be perceived entering into the papilla, or the beginning of an animal of the like kind, most probably to convey it nourishment till it is provided with claws; the remaining part of these slender guts are continued on in the fleshy tube, without doubt for the same purpose of producing and supporting more young ones from the same common parent.

"The many longitudinal fibres that we discover lying parallel to each other, on the inside of the semi-transparent skin, are all inserted in the several claws round the animal's mouth, and are plainly the tendons of the muscles for moving and directing the claws at the will of the animal: these may be likewise traced down to the adhering tube.

"As this specimen has been preserved in spirits, the colour of the animal, when living, cannot be certainly known; it is at present of a pale yellowish brown.

"With regard to its name, it may be called *Acinia sociata*, or the *Cluster Animal-flower*."

The Abbé Dicquemarre, by many curious, though cruel, experiments related in the Phil. Trans. for 1773, has shown that these animals possess, in a most extraordinary degree, the power of reproduction; so that scarce any thing more is necessary to produce as many sea-anemonies as we please, than to cut a single one into as many species. A sea-anemone being cut in two by a section through the body, that part, where the limbs and mouth are placed, eat a piece of a muscle offered to it soon after the operation, and continued to feed and grow daily for three months after. The food

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Animal-
Flower.

sometimes passed through the animal; but was generally thrown up again, considerably changed, as in the perfect sea-anemone. In about two months, two rows of limbs were perceived growing out of the part where the incision was made. On offering food to this new mouth, it was laid hold of and eat; and the limbs continually increasing, the animal gradually became as perfect as those which had never been cut. In some instances, however, he found, that, when one of these creatures was cut through, new limbs would be produced from the cut place, those at the mouth remaining as before; so that a monstrous animal was the consequence, having two mouths, and feeding at both ends. Having put some of them into a pan of water, set over a slow fire, he found that they lost their life at 50 degrees of Reamur's thermometer. To avoid the imputation of cruelty in these experiments, the author argues the favourable consequences that have attended his operations on the sea-anemonies which have been so fortunate as to fall into his hands; as he hath not only multiplied their existence, but also renewed their youth; which last, he adds, "is surely no small advantage."

In Hughes's Natural History of Barbadoes an account is also given of several species of animal-flowers. They are there described as only found in a basin in one particular cave; and of the most remarkable species mentioned by him we have the following description.

"In the middle of the basin, there is a fixed stone, or rock, which is always under water. Round its sides, at different depths, seldom exceeding 18 inches, are seen, at all times of the year, issuing out of little holes, certain substances that have the appearance of fine radiated flowers, of a pale yellow, or a bright straw colour, slightly tinged with green, having a circular border of thick-set petals, about the size of, and much resembling, those of a single garden-marigold, except that the whole of this seeming flower is narrower at the discus, or setting on of the leaves, than any flower of that kind.

"I have attempted to pluck one of these from the rock, to which they are always fixed; but never could effect it: for as soon as my fingers came within two or three inches of it, it would immediately contract close together its yellow border, and shrink back into the hole of the rock; but if left undisturbed for about four minutes, it would come gradually in sight, expanding, though at first very cautiously, its seeming leaves, till at last it appeared in its former bloom. However, it would again recoil, with a surprising quickness, when my hand came within a small distance of it. Having tried the same experiment by attempting to touch it with my cane, and a small slender rod, the effect was the same.

"Though I could not by any means contrive to take or pluck from the rock one of these animals entire; yet I once cut off (with a knife which I had held for a long time out of sight, near the mouth of an hole out of which one of these animals appeared) two of these seeming leaves. These, when out of the water, retaining their shape and colour; but, being composed of a membrane-like substance, surprisingly thin, it soon shrivelled up, and decayed."

The reproductive power of the Barbadoes animal-flower is prodigious. Many people coming to see these strange creatures, and occasioning some inconvenience

D

nience

Animal-
Food
||
Animalcule

nience to a person through whose grounds they were obliged to pass, he resolved to destroy the objects of their curiosity; and, that he might do so effectually, caused all the holes out of which they appeared, to be carefully bored and drilled with an iron instrument, so that we cannot suppose but their bodies must have been entirely crushed to a pulp: nevertheless, they again appeared in a few weeks from the very same places.

Plate XXX. fig. 1 represents the actinia sociata, or clustered animal flower, described by Mr Ellis, with its radical tube adhering to a rock: (a) One of the animals stretching out its claws. Fig. 2. A perpendicular dissection of one of the bodies, to show the gullet, intestines, stomach, and fibres or tendons that move the claws: (a) A young one arising out of the adhering tube. Fig. 3. The actinia alter, or animal-flower of the newly ceded islands. Fig. 4. The actinia anemone, or sea-anemone from the same place. Fig. 5. The under part of the same by which it adheres to the rocks. Fig. 6. The actinia helianthus, or the sea sun-flower from ditto. Fig. 7. The under part of the same. Fig. 8. The actinia dianthus, or sea-carnation, from the rocks at Hastings in Suffex. This animal adheres by its tail, or sucker, to the under part of the projecting rocks opposite to the town; and, when the tide is out, has the appearance of a long white fig: this is the form of it when put into a glass of sea-water. It is introduced here as a new variety of this animal not yet described.

ANIMAL-FOOD. See FOOD.

ANIMAL-Oeconomy. This subject is explained under ANATOMY.

ANIMAL-Magnetism. See MAGNETISM.

ANIMAL Spirit. See NERVOUS Fluid.

ANIMAL System denotes the whole class of beings endowed with animal life, otherwise called *Animal KINGDOM*.

ANIMALS, the preparations of, for collections or museums. See QUADRUPEDS, BIRDS, REPTILES.

Pairing of ANIMALS. See PAIRING.

Common
acceptation
of the word.

ANIMALCULE, in general, signifies a little animal; and thus the term might be applied to every animal which is considerably inferior in size to ourselves. It hath been customary, however, to distinguish by the name of *animalcules* only such animals as are of a size so diminutive, that their true figure cannot be discerned without the assistance of glasses; and more especially it is applied to such as are altogether invisible to the naked eye, and cannot even be perceived to exist but by the assistance of microscopes.

2
Different
sizes of ani-
malcules.

By the help of magnifying glasses, we are brought into a kind of new world; and numberless animals are discovered, which from their minuteness must otherwise for ever have escaped our observation: and how many kinds of these invisibles there may be, is still unknown; as they are discerned of all sizes, from those which are barely invisible to the naked eye, to such as resist the action of the microscope, as the fixed stars do that of the telescope, and with the best magnifiers hitherto invented appear only as so many moving points.

The smallest living creatures our instruments can show are those that inhabit the waters: for though possibly animalcules equally minute, or perhaps more so, may fly in the air, or creep upon the earth, it is scarce possible to bring such under our examination; but water being transparent, and confining the creatures in it,

we are able, by applying a drop of it to our glasses, to discover, to a certain degree of smallness, all that it contains.—Some of the most curious of these animalcules, which have been described by microscopical observers, we shall here give an account of.

1. *The Hair-like Insect*. This is so called by Mr Baker on account of its shape; being extremely slender, and frequently an hundred and fifty times as long as broad. The body or middle part, which is nearly straight, appears, in some, composed of such rings as the windpipe of land-animals is made up of; but in others, seems rather scaled, or made up of rings that obliquely cross one another. Its two ends are hooked or bent, pretty nearly in the same degree, but in a direction opposite to one another; and as no eyes can be discerned, it is difficult to judge which is the head or tail. Its progressive * motion is very singular, being performed by turning upon one end as a centre, and describing almost a quarter of a circle with the other, as represented in the figure. Its motions are very slow, and require much patience and attention in the observer. These creatures are so small, that millions of millions of them might be contained in an inch square. When viewed singly, they are exceedingly transparent, and of a beautiful green colour; but when numbers of them are brought together, they become opaque, lose their green colour, and grow entirely black.

Notwithstanding the extreme minuteness of these animalcules, they seem to be fond of society; for, after viewing for some time a parcel of them taken up at random, they will be seen disposing themselves in a kind of regular order †. If a multitude of them are put into a jar of water, they will form themselves into a regular body, and ascend slowly to the top, where, after they have remained for some time exposed to the air, their green colour changes to a beautiful sky-blue. When they are weary of this situation, they form themselves into a kind of rope, which slowly descends as low as they intend; but if they happen to be close to the side of the jar, they will descend upon it. They are so nearly of the specific gravity of water itself, that they will either remain at the bottom, float on the surface, or be suspended in the middle, according as they are originally placed, or as they themselves have a mind.

A small quantity of the matter containing these animalcules ‡ having been put into a jar of water, it so happened, that one part went down immediately to the bottom, whilst the other continued floating on the top. When things had remained for some time in this condition, each of these swarms of animalcules began to grow weary of its situation, and had a mind to change its quarters. Both armies therefore, set out at the same time, the one proceeding upwards, and the other downwards; so that, after some hours journey, they met in the middle. A desire of knowing how they would behave on this occasion, engaged the observer to watch them carefully; and to his surprise he saw the army that was marching upwards, open to the right and left, to make room for those that were descending. Thus, without confusion or intermixture, each held on its way; the army that was going up, marching in two columns to the top, and the other proceeding in one column to the bottom, as if each had been under the direction of wise leaders.

The hair-like insect was first discovered in a ditch at Norwich,

Animal-
cule.

3
Hair-like
insect.

Pl. XXXI.
fig. 1.

4
Its extreme
smallness,
&c.

5
Delights in
society.

† Fig. 2.

‡ Fig. 3.

6
Seems pos-
sessed of a
consider-
able degree
of sagacity.

Fig. 2.

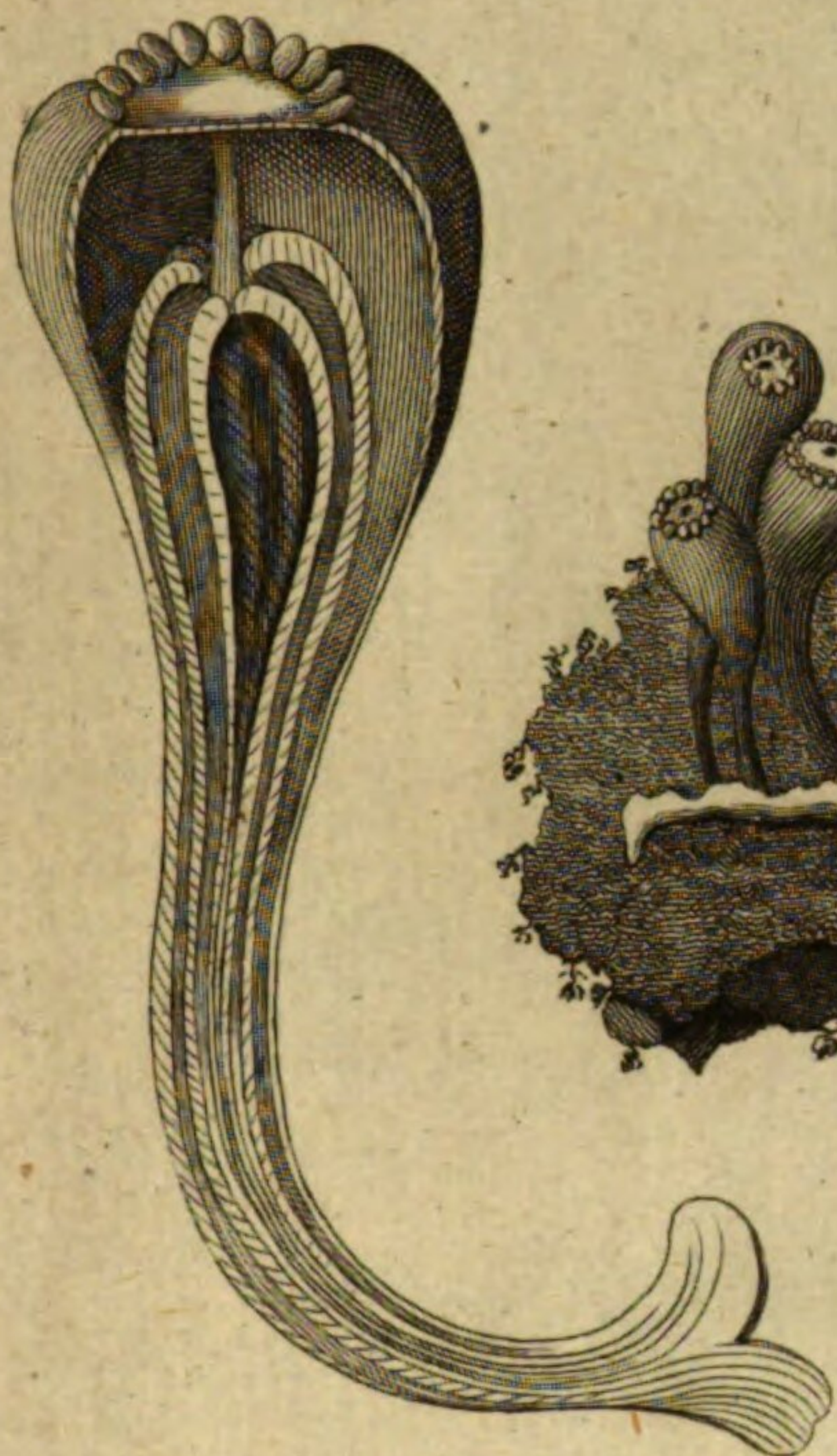


Fig. 1.

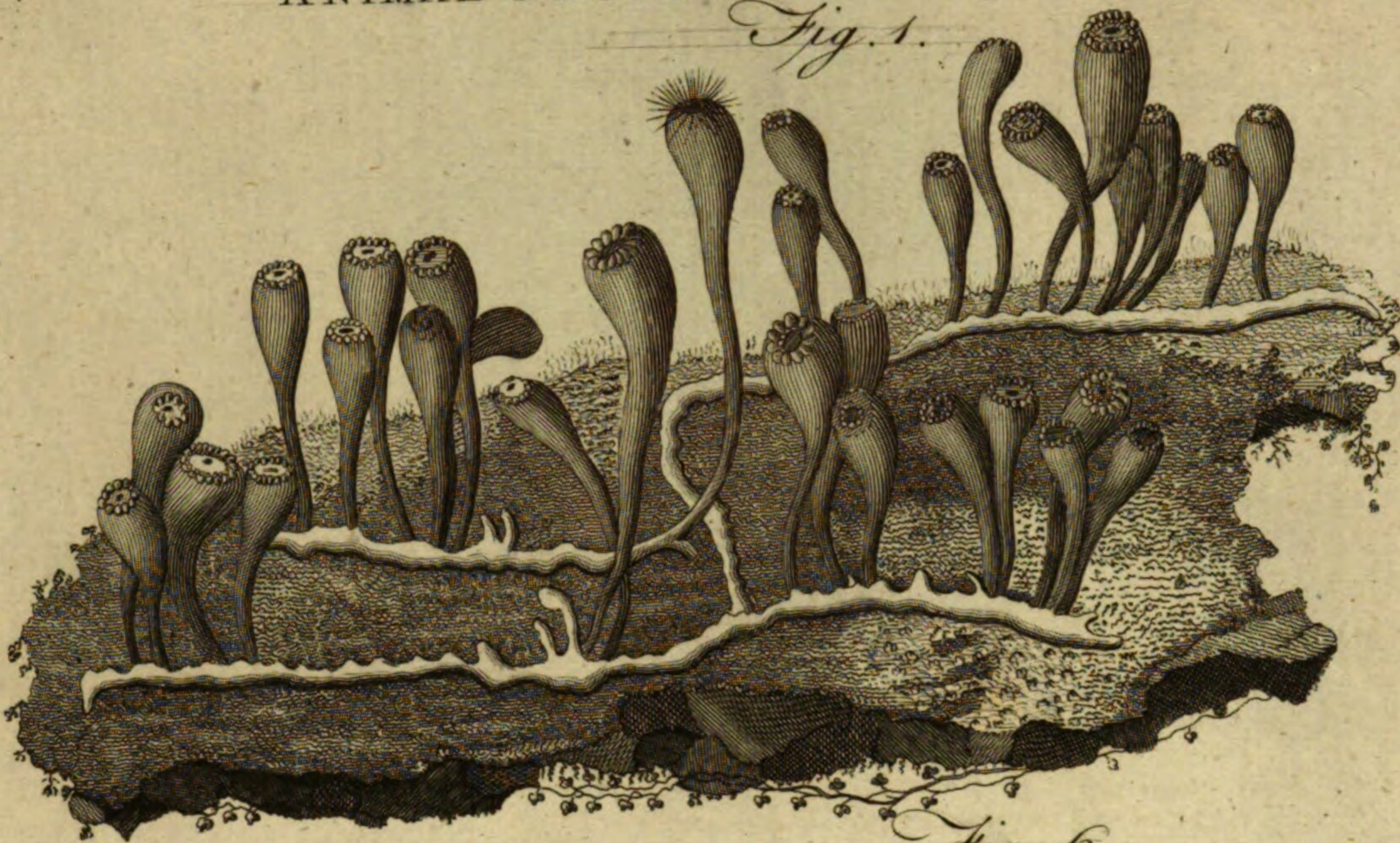


Fig. 6.

Fig. 4.

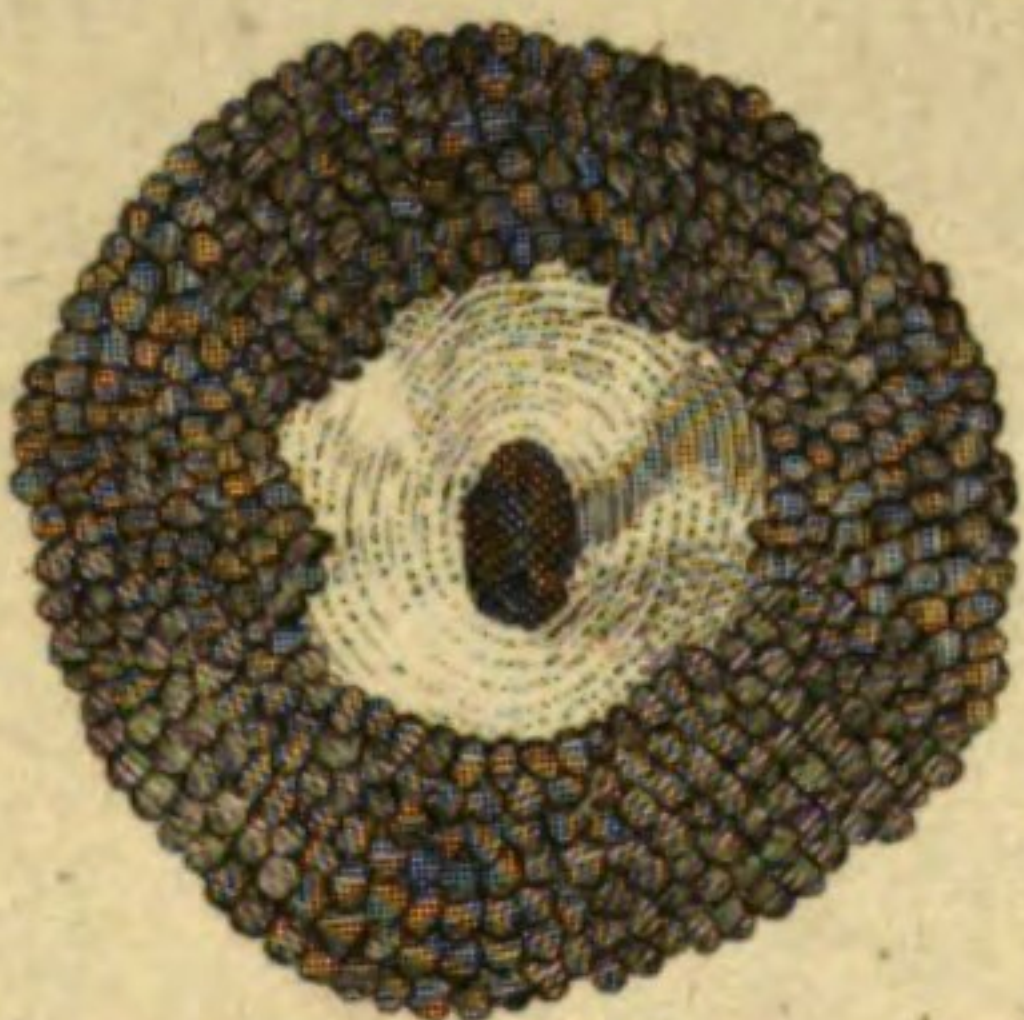


Fig. 3.

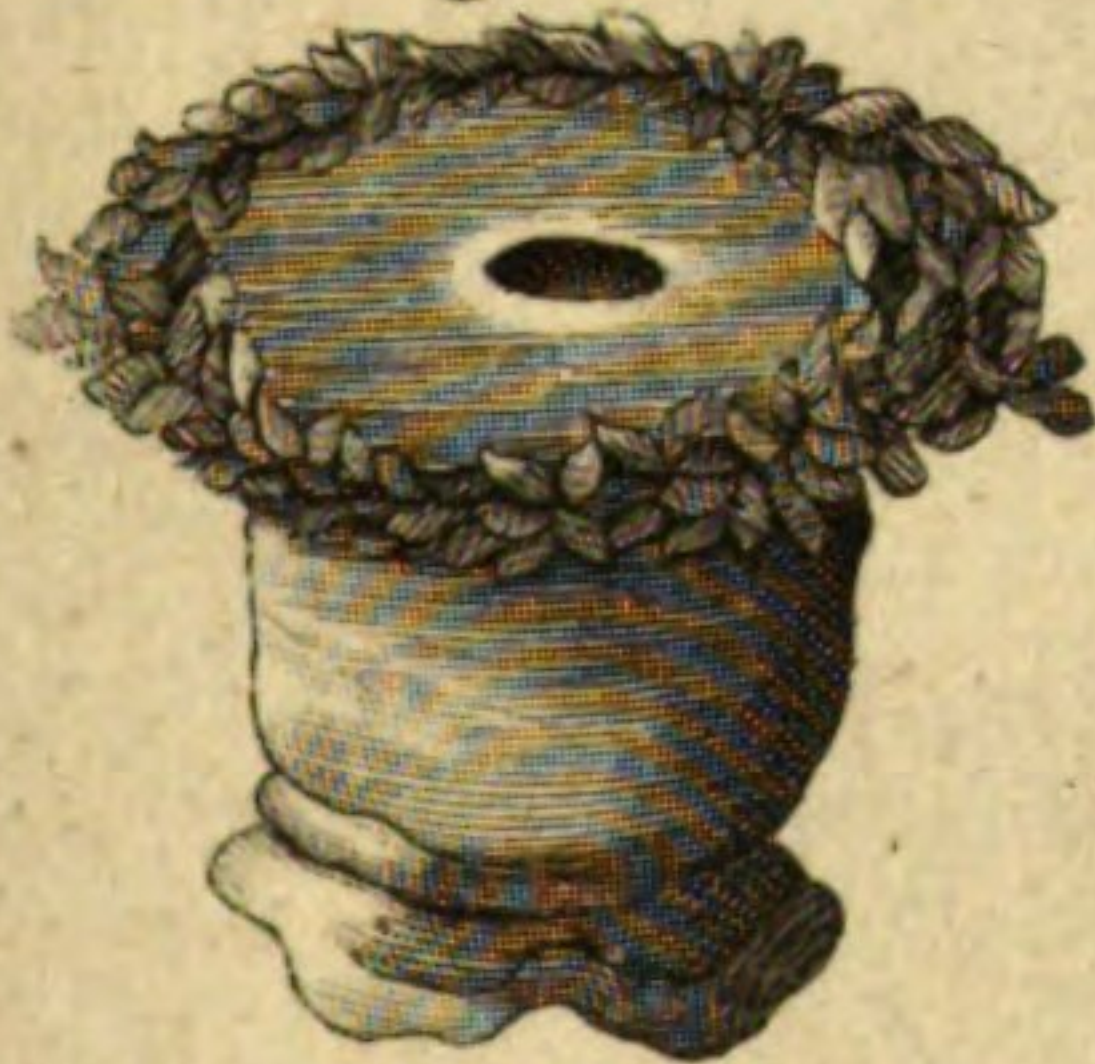


Fig. 7.



Fig. 5.

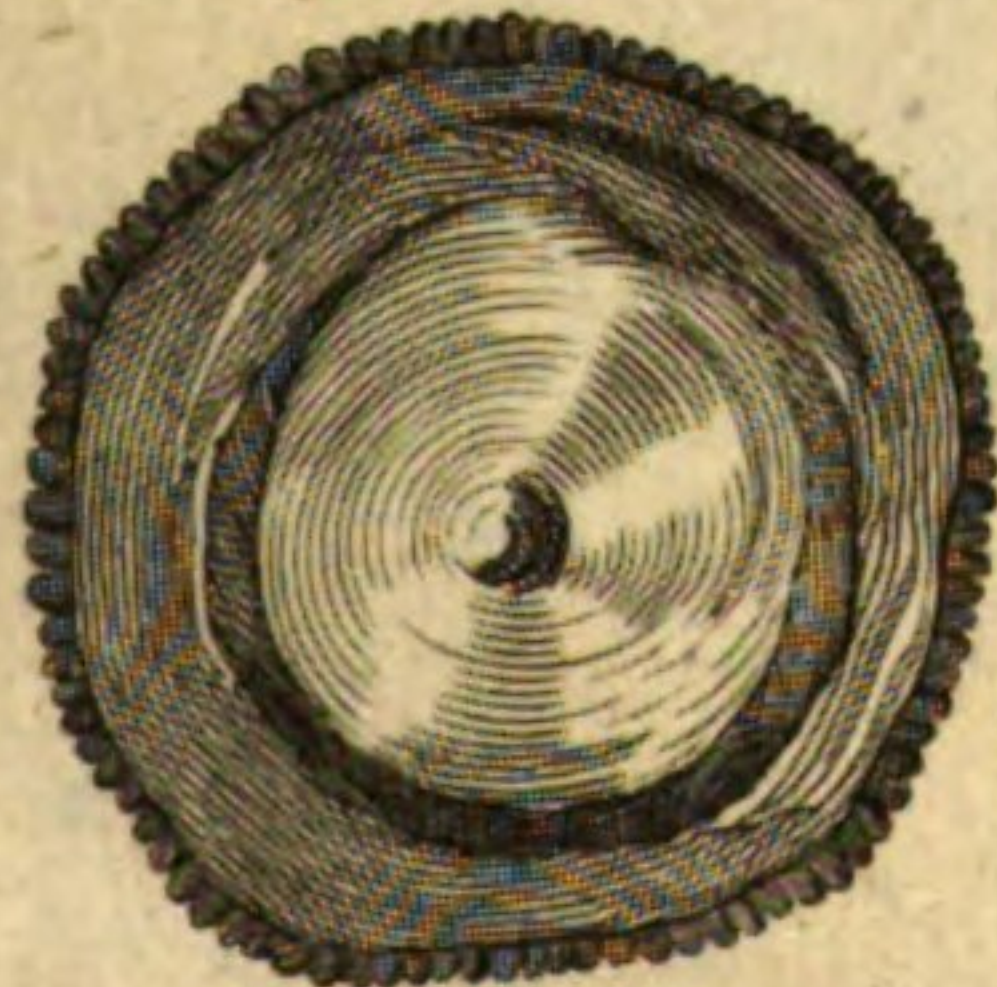
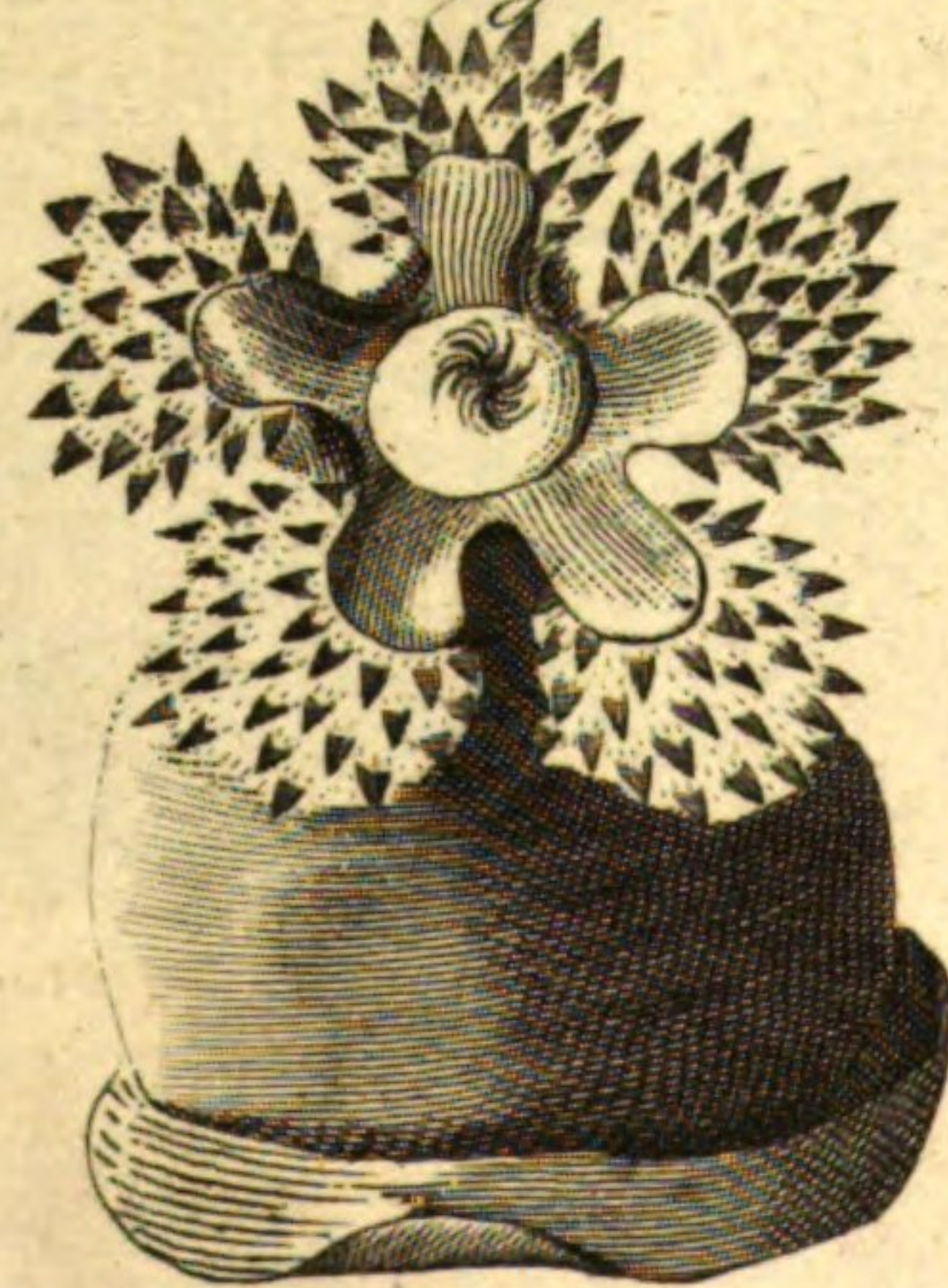


Fig. 8.





Animal-
cule.
7
Found in
prodigious
quantity.

Norwich, one end of which communicates with the river there, and the other end with a second ditch, into which several kennels empty themselves. The length of this ditch, when Mr Baker wrote his account of this animalcule, was at least 100 yards, and its breadth nine. The bottom, for more than a foot thick, was covered with a blackish green substance, in appearance like mud, made up for the most part of these insects; but, supposing only an half or a quarter part of it to be composed of them, according to the dimensions we have given, their numbers must exceed all imagination.

8
Eels in paste
viviparous

2. *Eels in paste*, &c. When paste is allowed to stand till it becomes sour, it is then found to be the habitation of numberless animalcules, which may be discerned by the naked eye; and though their form cannot be perfectly distinguished, their motion is very perceptible, and the whole paste will seem to be animated. Fig. 4. represents one of these anguillæ magnified. The most remarkable property of these insects is, that they are viviparous. If one of them is cut through near the middle, several oval bodies of different sizes will be seen to issue forth. These are young anguillæ, each of them coiled up and inclosed in its proper membrane, which is so exquisitely fine, as scarce to be discernible by the greatest magnifier, while it incloses the embryo animal. The largest and most forward immediately break through this covering, unfold themselves, and wriggle about in the water nimbly; others get out, uncoil, and move themselves about more slowly; and the least mature continue entirely without motion. The uterus, or vessel that contains all these oval bodies, is composed of many ringlets, not unlike the aspera arteria of land-animals, and seems to be considerably elastic; for as soon as the animalcule is cut in two, the oval bodies are thrust out with some degree of violence, from the springing back or action of this bowel. An hundred and upwards of the young ones have been seen to issue from the body of one single eel, whereby the prodigious increase of them may be accounted for; as probably several such numerous generations are produced in a short time. They seem to be all prolific; and unless trial happens to be made upon one that has brought forth all its young, or when the paste has been kept for a very long time, the experiment will always succeed.—This property of these eels being viviparous renders it highly improbable that they ever become flies.

9
Similar
creatures
found in
blighted
wheat.

Animalcules of a similar kind are likewise found in vinegar; and, like those already described, are found to be viviparous. But it is not only in acid matters that such appearances are observed. In some fields of wheat, many grains may be observed, that appear blackish outwardly, as if scorched; but when opened are found to contain a soft white substance, which, attentively considered, appears to be nothing else than a congeries of threads or fibres lying close to each other in a parallel direction, much resembling the unripe down of some thistles on cutting open the flower-heads before they begin to blow. This fibrous matter discovers not the least sign of life or motion, unless water is applied; but immediately on wetting, provided the grains of wheat have been newly gathered, the supposed fibres separate, and appear to be living creatures. Their motions at first are very languid; but gradually become more vigorous, twisting and wriggling themselves somewhat in

the manner of the eels in paste, but always slower than they, and with a great deal of less regularity.

If the grains of wheat are grown dry by keeping, and in that condition are cut open, the fibrous matters is very distinguishable; and, on putting water to it, will separate with great readiness, and seem like fine tubes or threads tapering at both ends: but not the least motion will be perceived till they have been in water for several hours, and sometimes they will never move at all. But if the same grains are steeped in water for three or four hours, or buried for some days in the earth, till they are fully saturated with moisture, and then opened with a penknife; on taking out a small portion of the white matter carefully, and spreading it thin upon a slip of glass, the animalcules will be seen bundled together, and extended longitudinally, but without motion: and though, upon the application of water, they will not revive so soon as those taken from fresh grains, whose moisture has never been exhaled; yet, after remaining an hour or two in water, they are constantly found alive and vigorous, even though the grains have been kept in a dry condition for several years. It is necessary, however, to adapt, in some measure, the time of continuing the grains in water or earth to the age and dryness of them: for if they are not opened before they are too much softened, the animalcules will be dead; and unless the husks are opened to let those creatures out after they have been steeped, they inevitably perish in them: otherwise, they will continue alive in water for many months; and, should the water dry away, may be revived again by giving them a fresh supply.

3. *The Proteus*. This animalcule has been dignified by Mr Baker with the name of *Proteus*, on account of its assuming a great number of different shapes, so as scarce to be known as the same animal in its various transformations; and indeed, unless it be carefully watched while passing from one shape to another, it will often become suddenly invisible, as happened more than once to Mr Baker.

When water, wherein any sort of vegetable has been infused, or animals preserved, has stood quietly for some days, or weeks, in any glass or other vessel, a slimy substance will be collected about the sides: some of which being taken up with the point of a pen-knife, placed on a slip of glass in a drop of water, and looked at through the microscope, will be found to harbour several kinds of little animals that are seldom found swimming about at large; among which the proteus is one. Its shape is better understood from the figure, than from any description that could be given. Its substance and colour seems to resemble that of a snail; and its whole shape seems to bear a considerable resemblance to that of a swan. It swims to and fro with great vivacity: but will now and then stop for a minute or two; during which time its long neck is usually employed as far as it can reach, forwards, and on every side, with a somewhat slow, but equable motion, like that of a snake, frequently extending thrice the length of its body, and seemingly in search of food.

There are no eyes, nor any opening in the head like a mouth, to be discerned: but its actions plainly prove it to be an animal that can see; for though multitudes of different animalcules swim about in the same water, and its own progressive motion is very swift, it never

Animal-
cule.

10
How disco-
verable.

11
Precautions
necessary in
making the
experi-
ments.

12
Proteus,
why so cal-
led.

13
Where
found.

14
Its shape,
Its colour, &c.

Animal-
cule.15
Its transfor-
mations.

strikes against any of them, but directs its course between them with a dexterity wholly unaccountable, should we suppose it destitute of sight.

When the proteus is alarmed, it suddenly draws in its long neck, represented in fig. 5. and 6. transforming itself into the shape represented in fig. 7. when it becomes more opaque, and moves about very slowly, with the large end foremost. When it has continued some time in this posture, it will often, instead of the head and neck it had formerly, put forth a new one, with a kind of wheel-machinery, represented fig. 8. the motions of which draw a current of water to it from a considerable distance. Having often pulled in and thrust out this short head, sometimes with and sometimes without the wheel-work, the creature, as if weary, will remain motionless for a while; then its head and long neck will be very slowly protruded, as in fig. 9. and it soon resumes its former agility. Sometime it disposes of its neck and head, as represented in fig. 10.

16
Vorticella,
where
found.

4. *The Wheel-Animal, or Vorticella.* This wonderful animalcule is found in rain-water that has stood some days in leaden gutters, or in hollows of lead on the tops of houses; or in the slime or sediment left by such water; and perhaps may also be found in other places: but if the water standing in gutters of lead, or the sediment left behind it, has any thing of a red colour in it, one may be almost certain of finding them therein. Though it discovers no signs of life except when in the water, yet it is capable of continuing alive for many months after it is taken out of the water, and kept in a state as dry as dust. In this state it is of a globular shape, exceeds not the bigness of a grain of sand, and no signs of life appear: but, being put into water, in the space of half an hour a languid motion begins, the globule turns itself about, lengthens itself by slow degrees, assumes the form of a lively maggot, and most commonly in a few minutes afterwards puts out its wheels; swimming vigorously through the water, as if in search of food; or else, fixing itself by the tail, works the wheels in such a manner as to bring its food to it.

Fig. 23, and 24. show the wheel-animal in its globular form; fig. 11, and 12. in its maggot state; and fig. 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22. show the different appearances of its wheels, and also its various intermediate changes between the globular and maggot state.

17
Its wheel-
work de-
scribed.

The most remarkable part of this animalcule is its wheel-work. This consists of a couple of semicircular instruments, round the edges of which many little fibrillæ move themselves very briskly, sometimes with a kind of rotation, and sometimes in a trembling or vibrating manner. When in this state, it sometimes unfastens its tail, and swims along with a great deal of swiftness, seemingly in pursuit of its prey. Sometimes the wheels seem to be entire circles, armed with small teeth, like those of the balance-wheel of a watch, appearing projected forwards beyond the head, and extending sideways somewhat wider than its diameter. The teeth or cogs of these wheels seem to stand very regularly at equal distance: but the figure of them varies according to their position, the degree of their protrusion, and perhaps the will of the animal itself. They appear sometimes like minute oblong squares, rising at right angles from the periphery of a circle, like

ancient battlements on a round tower; at other times they terminate in sharp points, and altogether resemble a kind of Gothic crown. They are often seen in a kind of curvular direction, all bending the same way, and seeming like so many hooks; and now and then the ends of them will be perceived to be clubbed like mallets. This figure, however, as well as the first, they assume but rarely.

As these wheels are every where excessively transparent, except about their circular rim or edge, where the cogs are set, it is very difficult to determine by what contrivance they are turned about, or what their real figure is, though they seem exactly to resemble wheels moving round upon an axis. It is also hardly possible to be certain whether those circular bodies in which the teeth are set, are of a flat form, or hollow and conical; but they seem rather to be of a conical figure. The difficulty of conceiving how an articulation could be contrived so as to cause a real rotation, hath caused many people imagine that there was a deception in this case: But Mr Baker assures us, that when the wheels are fully protruded, they never fail to show all the visible marks of a regular rotation; and, in some positions, the same cogs or teeth may be traced by the eye during a complete revolution.

All the actions of this creature seem to imply sagacity and quickness of sensation. At the least touch or motion in the water, they instantly draw in their wheels; and Mr Baker conjectures, that their eyes are lodged somewhere about the wheels; because, while in the maggot state, its motions are slow and blundering; but, after the wheels are protruded, they are performed with great regularity, swiftness, and steadiness.

Notwithstanding the minuteness of this animalcule, the microscope generally discovers others in the same drop of water, compared with which the wheel-animal may be said to be a whale. The transparency of its body, therefore, allows its internal parts to be seen, which cannot be perceived in the minutest animalcules, on account of the smallness of their size. *a*, Is the appearance of the head; and though it is every where transparent, a ring or circle, more particularly remarkable for its clearness, is commonly perceived about the middle of the forehead, a little above the mouth. This, Mr Baker thinks, might justly be called the seat of the brain. Many vessels which seem to take their origin from thence are discernible in the head, wherein some transparent fluid appears continually agitated by a kind of fluctuating motion.

The throat, *b*, is joined to the head by a very short neck, *c*, and appears to be about the sixth part of the whole length of the animal. In the middle of the thorax is placed the heart, *d*, where its systole and diastole is plainly visible. It is seen through the back of the insect, shutting and opening alternately with great regularity and exactness. Its size is proportionable to the creature's bigness; and its shape, during the systole, is nearly circular, being composed seemingly of two semilunar parts, which then approach each other laterally, and form between them a roundish or horse-shoe like figure, whose upper side is flat, and the under one convex. The diastole is performed by a seeming separation, or opening, of these two semilunar parts, whereby the transverse diameter of the heart is very much enlarged. This separation begins exactly in the middle

Animal-
cule.18
Shows all
the marks
of a real ro-
tation.19
Shows great
quickness of
sensation.Fig. 15.
20
Description
of its inter-
nal parts.

Animal-
cule.

middle of the lower part next the tail; and opens to such a considerable width upwards, that the two parts, when at their utmost distention, seem only joined by an arched vessel at their anterior end. The alternate motions of contraction and dilatation are performed with great strength and vigour, in pretty much the same time as the pulsation of the arteries of a man in health. The motions of the heart are communicated to all the internal parts of the thorax; and seem to extend a great deal further; for a strict examination discovers, at the same time, throughout the whole animal, contractions and dilatations going on, that are apparently correspondent thereto. These motions of the heart, however, are sometimes suspended, or imperceptible, for two or three minutes: after which they are renewed, and go on again with the same regularity as before. From the under part of the thorax proceeds a small transparent horn represented at *a*, fig. 11, and 12. It is never visible but when the animal turns on its back or side.

The blood or circulating fluid of the wheel-animal is so absolutely colourless, that the current of it through the vessel is indistinguishable by glasses. A sort of irregular agitation of some fluid is indeed perceived, which is perhaps a compound motion of currents running different ways, and forming such an appearance, though no single current is any where distinctly visible.

Immediately below the thorax is another annular division, *e*, joining upwards to the thorax and downwards to the abdomen, the entrance whereof it serves occasionally to enlarge or diminish. The abdomen, *f*, is by much the largest part of the animal, and contains the stomach and intestines. When the insect is full of food, these bowels appear opaque and of a blood-red colour, extending quite through the belly and great part of the tail, and exhibiting a variety of contractions and dilatations. The belly is capable of stretching out greatly in length, or being shortened very much, and widening its diameter. It assumes many shapes, and becomes occasionally a case for all the other parts of the body.

21
Other kinds
of wheel-
animals.

Besides the above mentioned one, there are found in the waters several other species of animals furnished with wheels, some of which appear to have a rotatory, and others a vibratory, motion. Fig. 25. represents a kind found in the ditch at Norwich, where the hair-like insect is produced. They differ from the foregoing only in having very long tails. Fig. 26, 27, and 28. represent a species of wheel-animals, which are also covered with shells. The body of this species consists of three parts, in like manner as the other; only the thorax and abdomen, in this, are not separated by any gut, or intermediate vessel, but are joined immediately together. The heart is plainly perceived, having a regular systole and diastole, at *a*, as in the former species. These creatures occasionally draw themselves entirely within their shells; and the shell then appears terminated by six short spikes on one side and two on the other.

22
Manner of
producing
their young
ones.

The young ones of this species are carried in oval sacculi, or integuments, fastened externally to the lower part of their shells somewhere about the tail: these sacculi are sometimes opaque only at one end, and seemingly empty at the other; sometimes they appear opaque in the middle, with a transparency all round, as

in fig. 26. When a young one is about to burst its integuments, the parent assists it greatly, by wagging its tail, and striking the oval bag, so that the young one's head becomes as it were forced into the water, though the tail cannot be so soon disengaged. In this condition the young one sets its wheel a-going, and exerts all its endeavours to free itself from its confinement. When it has got clear, it swims away, wagging its tail as the old one does, and leaving the integument adhering to the shell of the parent. The old one then uses a number of efforts to get rid of this incumbrance, striking against it with her tail, fixing the end of her tail upon it, and then darting her body forwards; with several very odd motions not easy to be described. This kind of wheel-animals are great tormentors of the water-flea, *Pulex aquaticus arborescens* of Swammerdam; of which a figure is given from that author (Plate XXXII.): fig. 2. shows the natural size of the flea; and fig. 1. shows it magnified, with some of the wheel-animals adhering to it. These insects are often found in great numbers in the same water: and when that is the case, it is not uncommon to discover five or six of these crustaceous wheel-animals fastened by their tail to the shell or horns of the flea; causing it, seemingly, a vast deal of uneasiness; nor can they be driven away, or shaken off, by all the efforts the flea can use for that purpose.

Animal-
cule.Fig. 28. *a*.23
Insects the
Pulex A-
quaticus.

5. *The Bell-flower Animal or Plumed Polype.* These animalcules dwell in colonies together, from ten to fifteen (seldom falling short of the former number, or exceeding the latter), in a slimy kind of mucilaginous or gelatinous case; which, out of the water, has no determined form, appearing like a little lump of slime; but, when expanded therein, has some resemblance to the figure of a bell with its mouth upwards; and is usually about half an inch long, and a quarter of an inch in diameter. These bells, or colonies, are to be found adhering to the large leaves of duckweed, and other aquatic plants. They may be most easily discovered by letting a quantity of water, with duckweed in it, stand quietly for three or four hours in glass vessels in a window, or other place whence a strong light comes: for then, if any are about the duckweed, they will be found, on careful inspection, extending themselves out of their cases, and making an elegant appearance.

24
Bell-flower
animal.25
Where dis-
covered.

The bell, or case, which these animals inhabit, being very transparent, all the motions of its inhabitants may be discerned through it distinctly. It seems divided internally into several apartments, or rather to contain several smaller sacculi, each of which incloses one of these animals. The openings at the tops of these sacculi, are but just sufficient to admit the creature's head and a small part of its body to be thrust out beyond them, the rest remaining always in the case. It can, however, occasionally retire into its case altogether; and never fails to do so when alarmed by any sudden motion of the water, or of the vessel which contains it.

26
Motions of
the whole
colony.

Besides the particular and separate motion which each of these creatures is able to exert within its own case and independent of the rest; the whole colony together has a power of altering the position of the bell, or even of removing it from one place to another; and hence this bell is sometimes found standing perfectly upright, as in fig. 29, and 33. and sometimes bending the upper part

Animal-
cule.

part downwards, as in fig. 30. As these animalcules seem not to choose to stay together in societies whose number exceeds 15, when the colony happens to increase in number, the bell may be observed to split gradually, beginning from about the middle of the upper or anterior extremity, and proceeding downwards towards the bottom, as in fig. 32. till they at last separate entirely, and become two complete colonies independent of each other, one of which sometimes removes to another part of the vessel.

27
Description
of an indi-
vidual.

The arms of each individual of this colony are set round the head, to the number of 40, having each the figure of an Italic *f*, one of whose hooked ends is fastened to the head; and all together, when expanded, compose a figure shaped somewhat like a horse's shoe, convex on one side next the body, but gradually opening and turning outwards, so as to leave a considerable area within the outer extremities of the arms. When the arms are thus extended, the creature, by giving them a vibrating motion, can produce a current in the water, which brings the animalcules, or whatever other minute bodies are within the sphere of its action, with great velocity to its mouth, situated between the arms; where they are taken in if liked, or driven away by a contrary motion. The food is conveyed immediately from the mouth or opening between the arms, through a narrow neck, into a passage seemingly correspondent to the œsophagus in land animals; down which it passes into the stomach, where it remains for some time, and then is voided upwards, in small round pellets, thro' a gut whose exit is near the neck. The body consists of three divisions; in the uppermost of which are contained all the above-mentioned intestines, which are only to be discerned when the creature is full, at which time they become opaque. The other two divisions, which are probably fixed to the bell, seem to be of no other use than to give the creature a power of contraction and extension. The arms are not able to contract like those of the common polype; but, when the animal retires into its case, they are brought together in a close and curious order, so as to be easily drawn in. Though their general appearance, when expanded, is that of a cup whose base and top are of an horse-shoe form, they sometimes separate into four parts, and range themselves as in fig. 36. so as to resemble four separate plumes of feathers. Though their eyes cannot be discovered, yet Mr Baker thinks they have some perception of the light: for when kept in the dark, they always remain contracted: but on being exposed to the light of the sun or of a candle, they constantly extend their arms, and show evident signs of being pleased.

28
Seem to
have a per-
ception of
light.

Fig. 29. represents one complete colony or bell standing erect, with all the animals out of their kingdom, and their arms extended, exhibiting all together a very pretty appearance. *a*, represents two oval bodies, supposed by Mr Baker to be eggs.

Fig. 30. shows all the creatures withdrawn into their cells, and the end of the bell hanging downwards.

Fig. 33. shows the bell erect, with only one of the animals coming out, in order to show its connection with the bell.

Fig. 34. shows the head and arms of a single polype closing together, and disposing themselves in order to be drawn into the bell.

Fig. 35. shows one complete animal greatly magni-

fied, to show its several parts more distinctly; viz. *a*, the head, resembling a horse-shoe; *b b*, the arms seen from one side; *c*, The narrow neck; *d*, the œsophagus; *e*, the stomach; *f*, the gut or last intestine through which the food passes after being digested in the stomach; *g*, the anus, where the feces are discharged in little pellets; *h i*, that part of the bell which surrounds the body of the animal, and closes upon it when it retires down.

Fig. 37. the head and arms seen in front.

6. *The Globe-animal.* This animalcule, represented fig. 38. seems exactly globular, having no appearance of either head, tail, or fins. It moves in all directions, forwards or backwards, up or down, either rolling over and over like a bowl, spinning horizontally like a top, or gliding along smoothly without turning itself at all. Sometimes its motions are slow, at other times very swift; and, when it pleases, it can turn round, as it were upon an axis, very nimbly, without removing out of its place. The whole body is transparent, except where the circular black spots are shown in the figure. Some of the animals have no spots, and others from one to seven. The surface of the whole body appears, in some, as if all over-dotted with points; in others, as if granulated like shagreen: but their more general appearance is, as if beset thinly round with short moveable hairs or bristles, which probably are the instruments by which their motions are performed. These animalcules many be seen by the naked eye, but appear only like moving points.

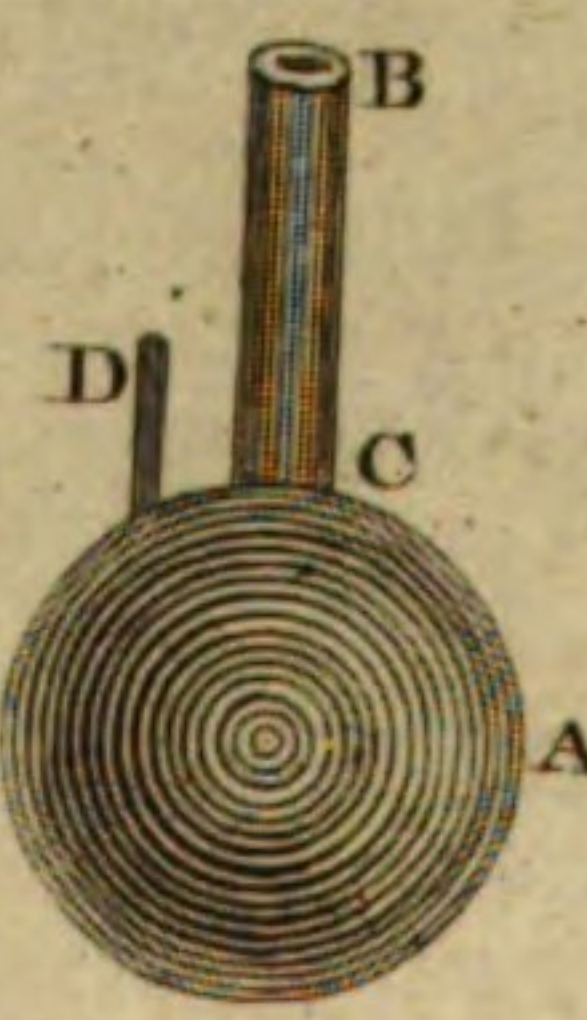
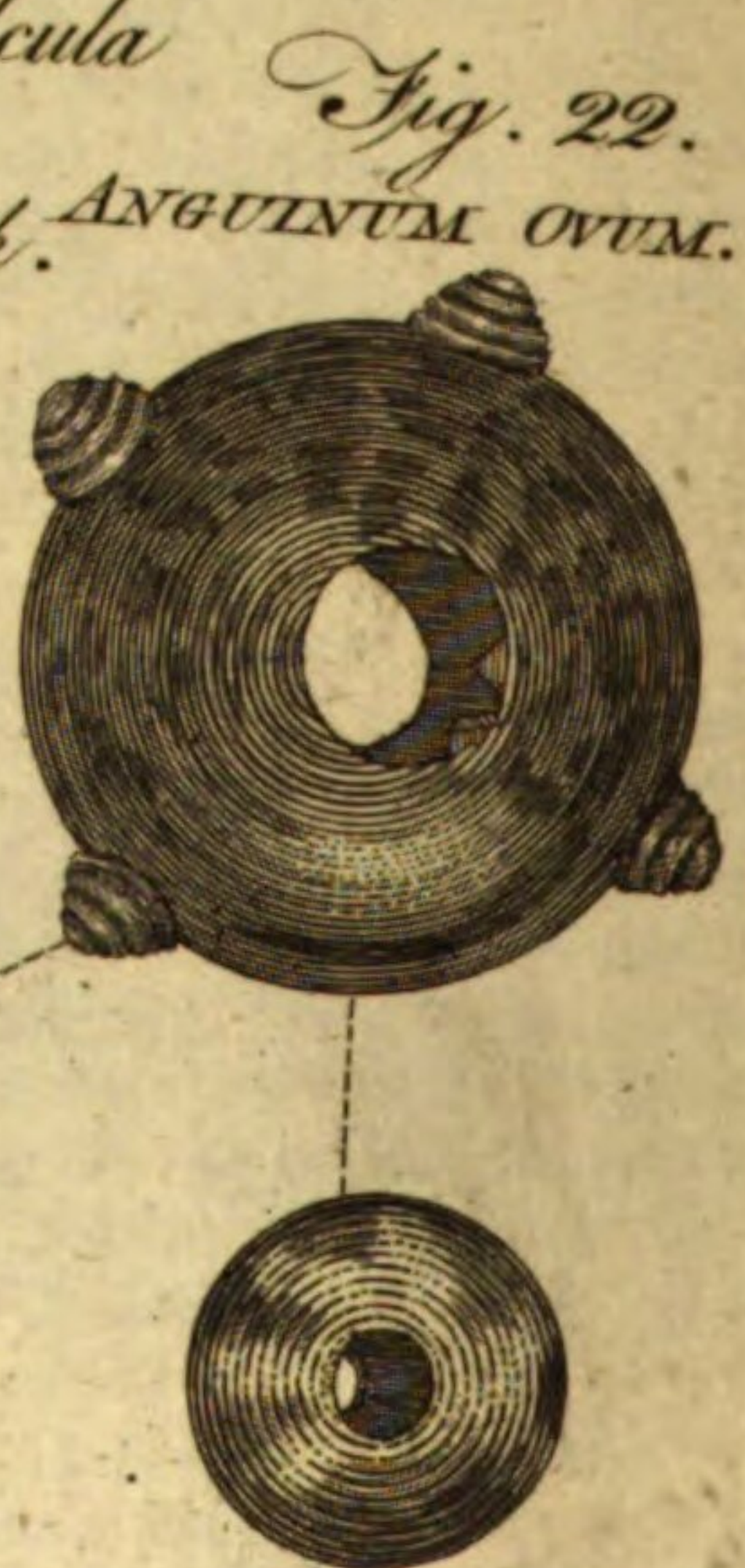
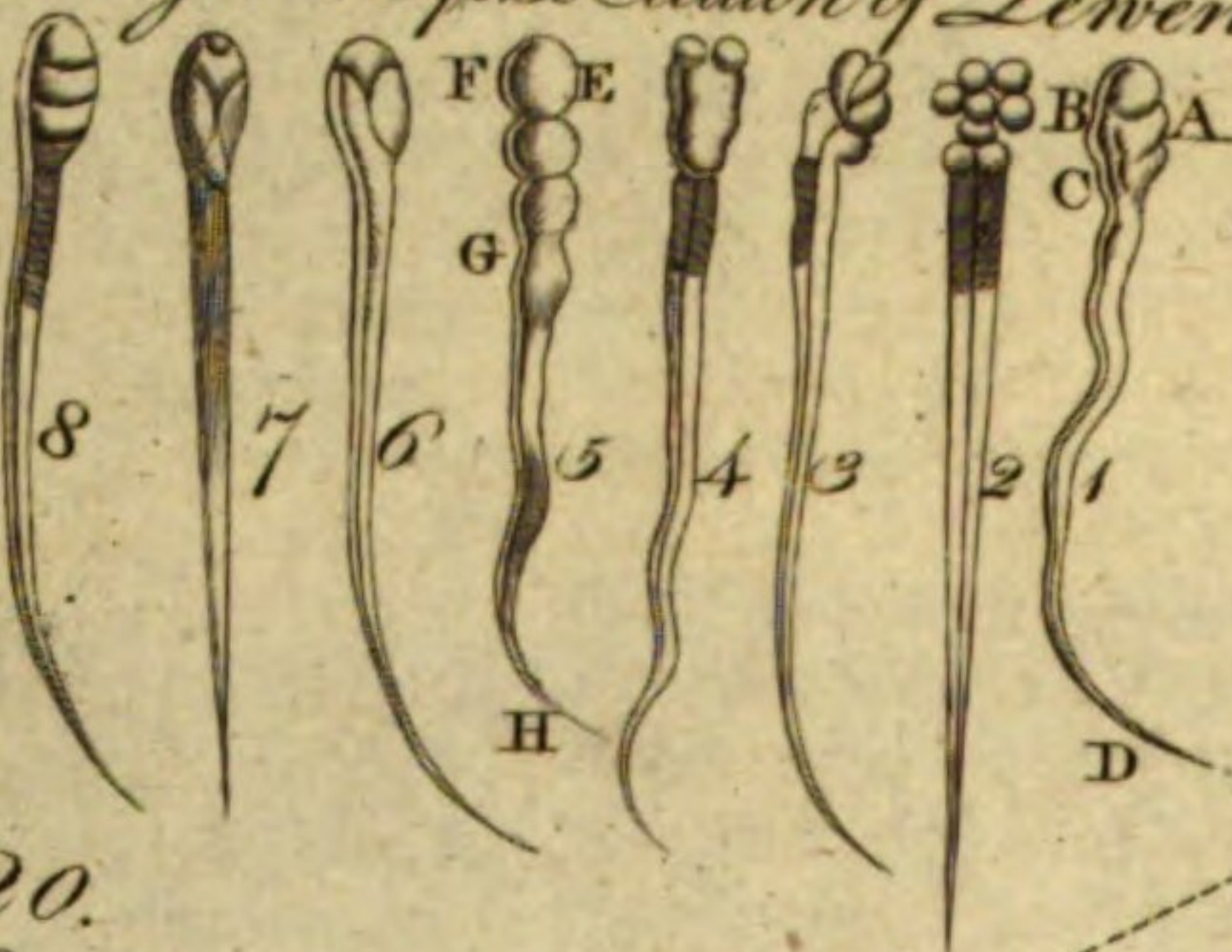
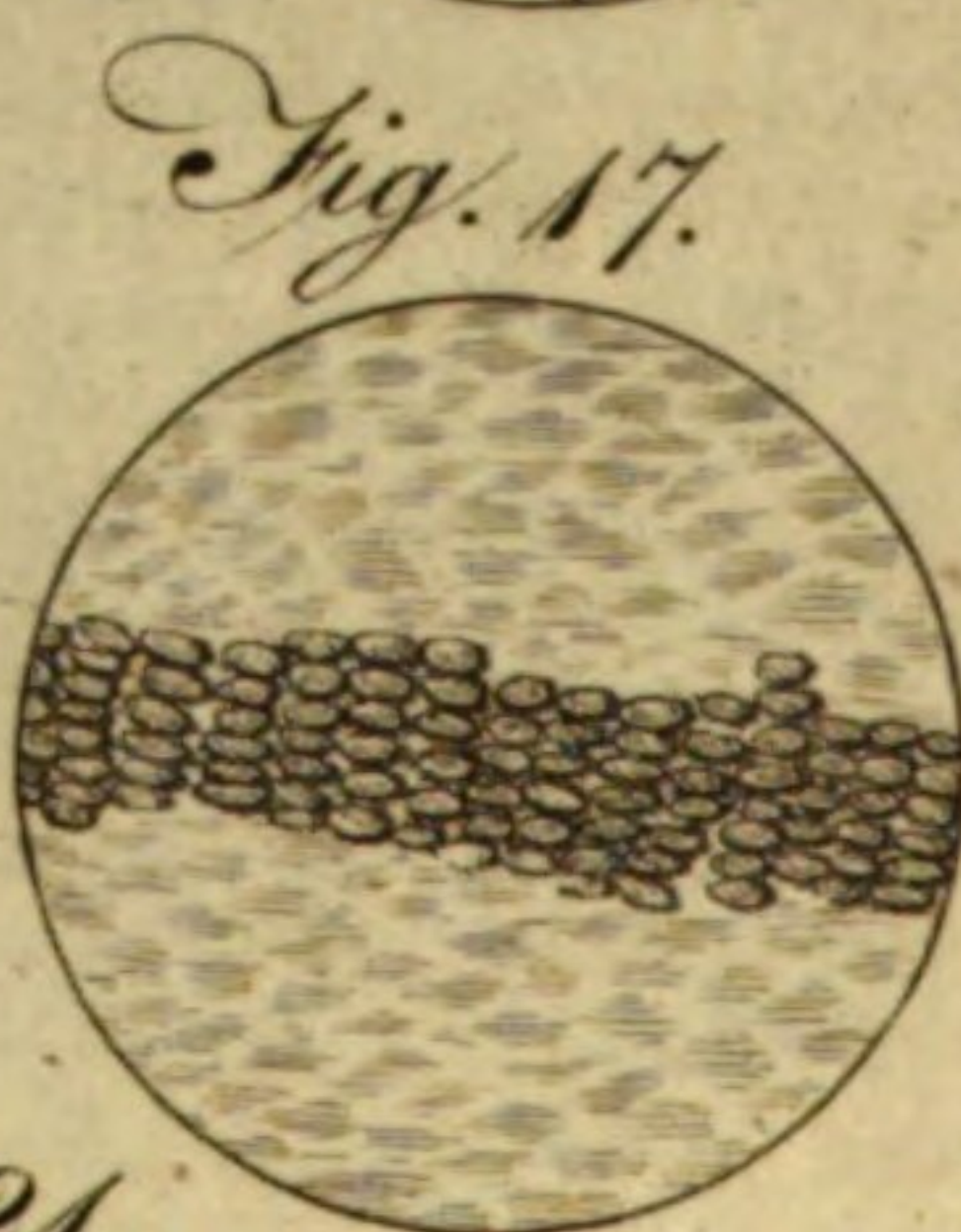
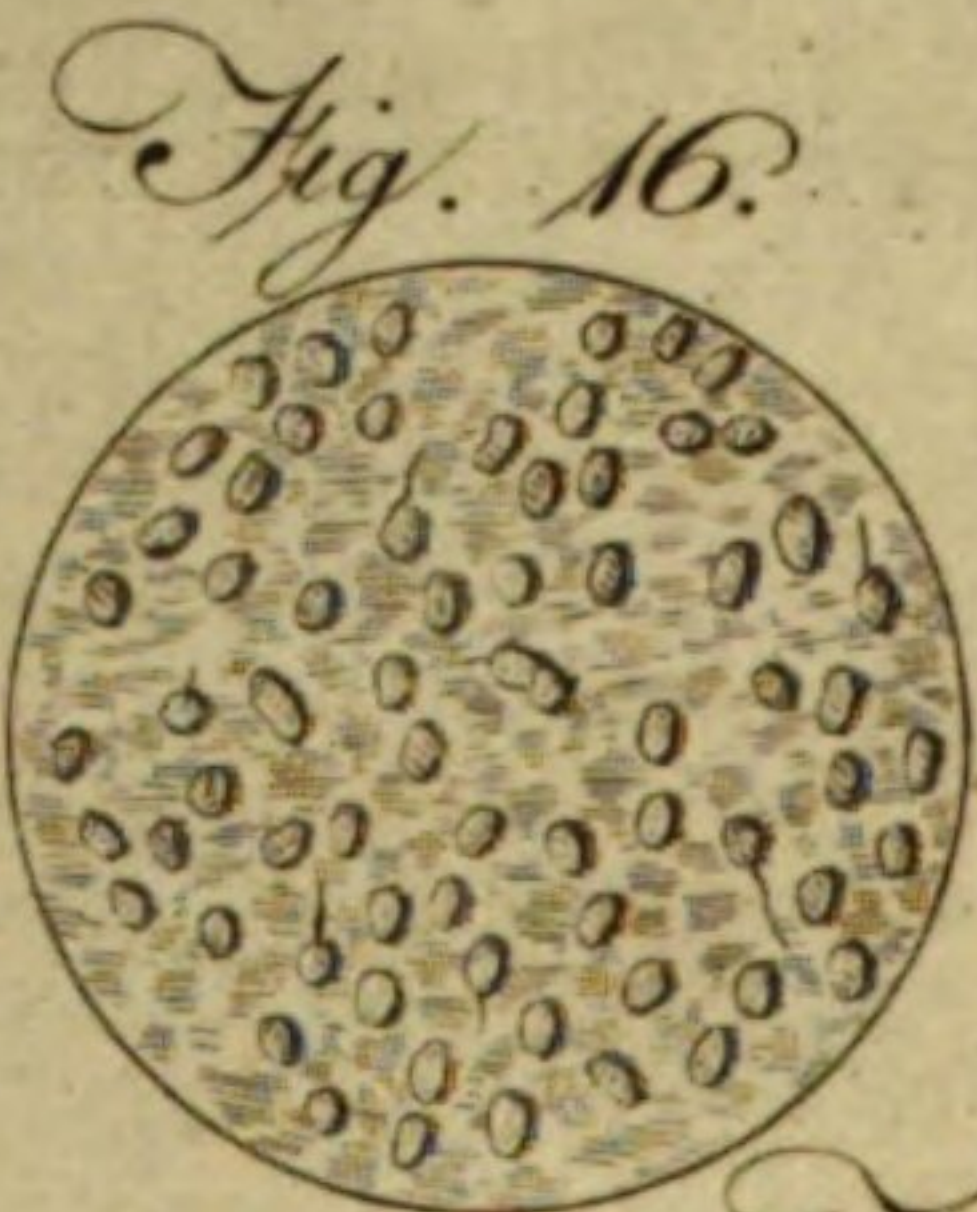
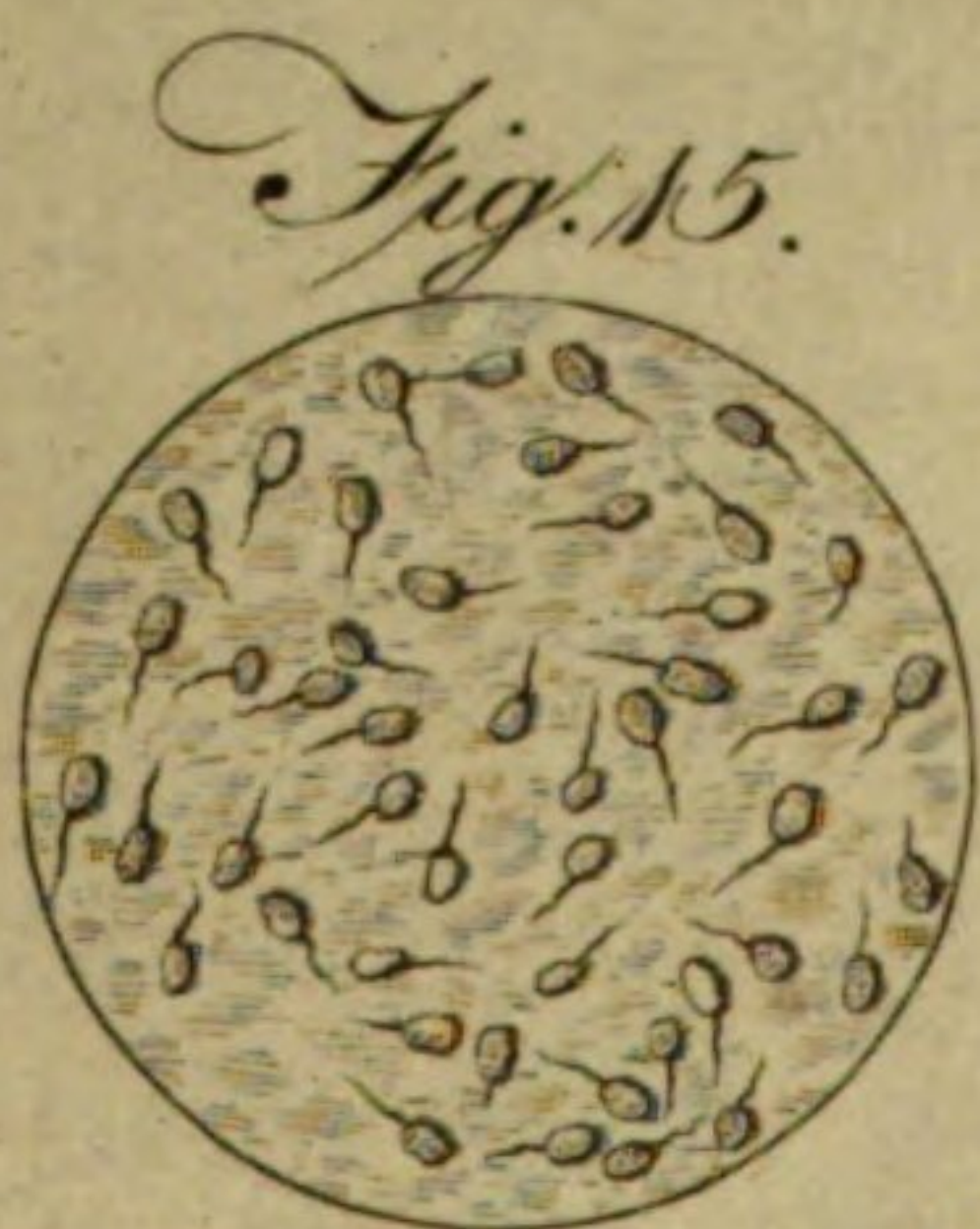
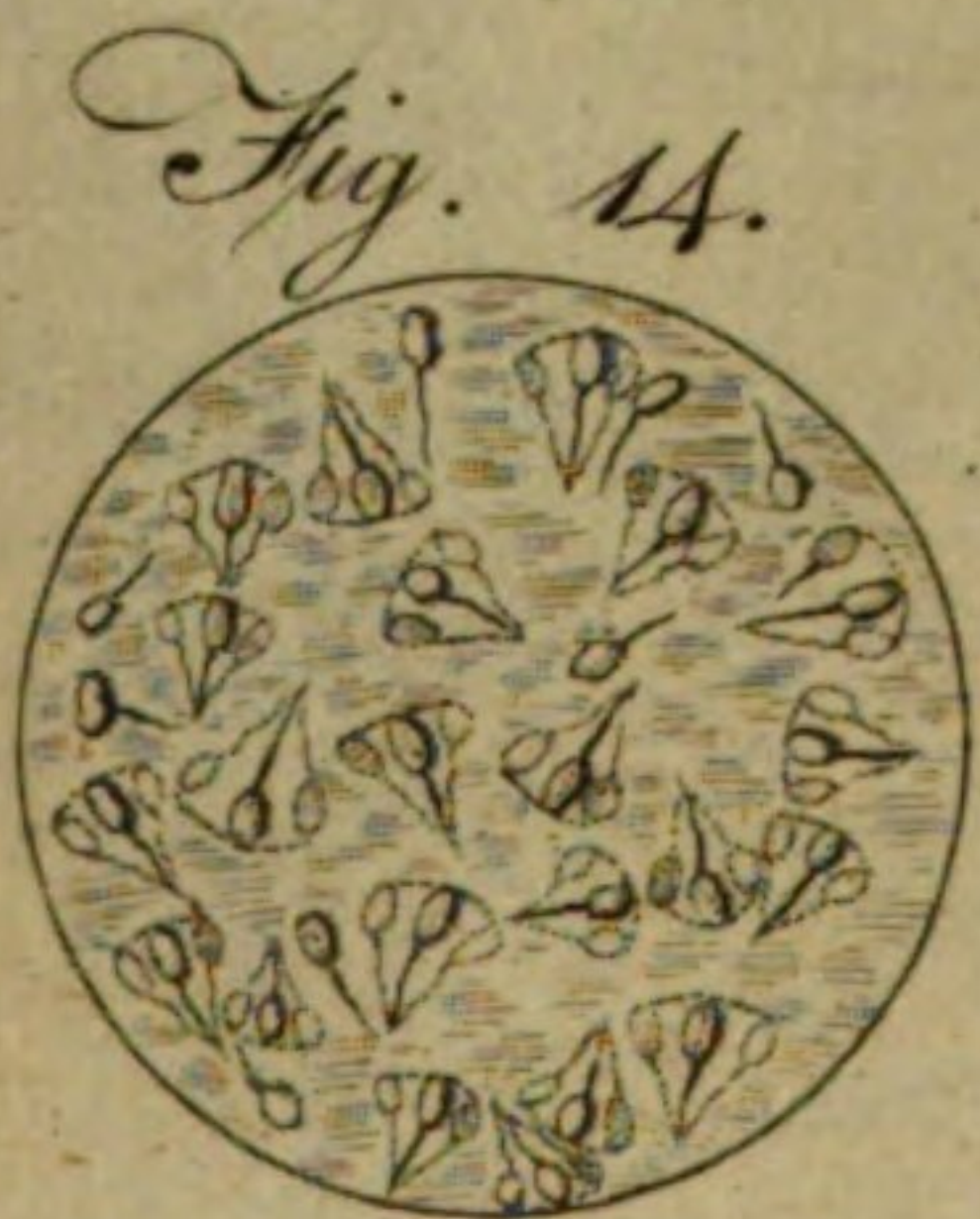
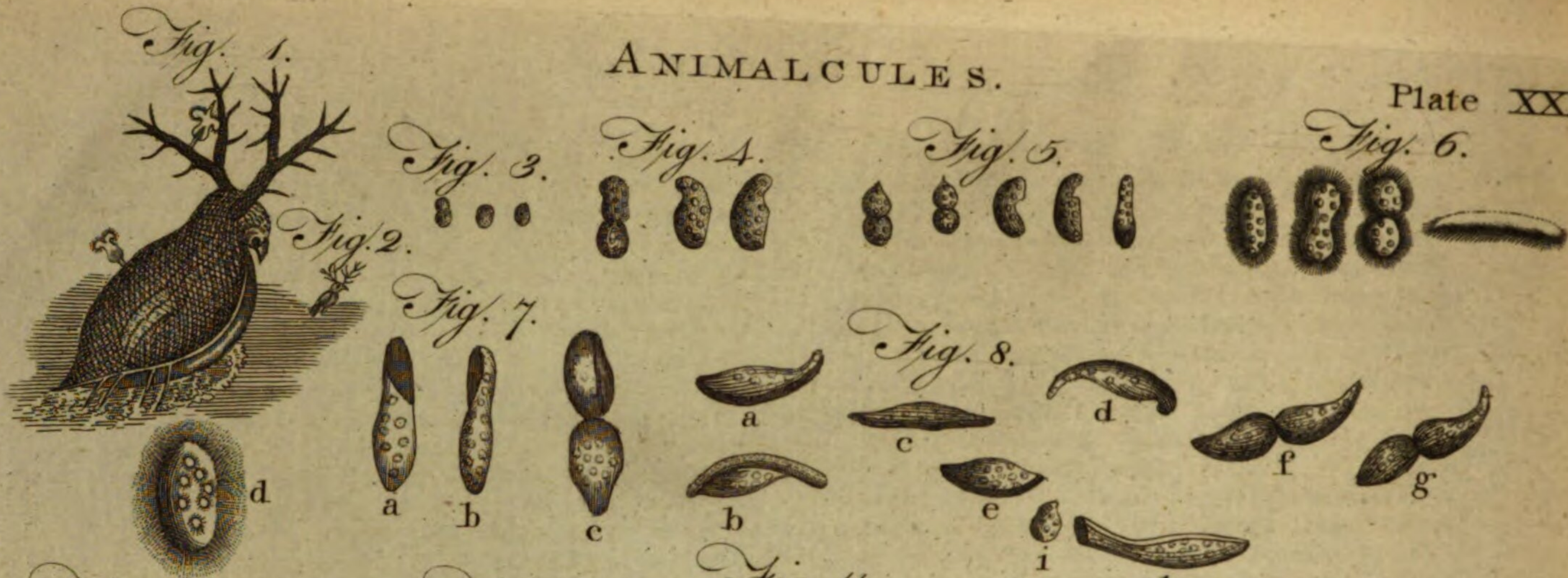
29
Globe-animal.

7. *The Pipe-animal.* These creatures are found on the coast of Norfolk, living in small tubes or cases of sandy matter, in such multitudes as to compose a mass sometimes of three feet in length. Fig. 39. shows a piece of such a congeries broke off, where *a a a a* represent the mouths or openings of the pipes wherein the little animals make their abode. Fig. 40. shows one single pipe, with its inhabitant, separated from the rest, and magnified nine or ten times in diameter. The pipe or case *b* is made of sand, intermixed here and there with minute shells, and all cemented together by a glutinous slime, probably issuing from the animal's own body *c*, which is composed of muscular ringlets like those of a worm, capable of great extension or contraction. The anterior end or head, *d*, is exceedingly beautiful, having round it a double row of little arms disposed in a very regular order, and probably capable of extension, in order to catch its food, and bring it to its mouth. Some of these tubes are found petrified, and constitute one species of syringoides.

30
Pipe-animal.

8. *An Insect with net-like arms.* The properties and shape of this little animal are very extraordinary. It is found only in cascades, where the water runs very swift. There these insects are found in clusters, standing erect on their tails; and resembling, when all together, the combs of bees at the time they are filled with their aureliæ. On being taken out of the water, they spin threads, by which they hang exactly in the same manner as the garden-spider. Fig. 42. shows one of these insects magnified. Its body appears curiously turned as on a lathe; and at the tail are three sharp spines, on which it raises itself, and stands upright in the water: but the most curious apparatus is about its head, where it is furnished with two instruments like fans or nets, which serve to provide its food. These it frequently spreads out and draws in again; and when drawn up they are

31
Sometimes
found petri-
fied32
Insects with
net-like
arms.



Animal-
cule.

are folded together with the utmost nicety and exactness, so as to be indiscernible when brought close to the body. At the bottom of these fans a couple of claws are fastened to the lower part of the head, which, every time the nets are drawn in, conduct to the mouth of the animal whatever is taken in them. When the creature does not employ its nets, it thrusts out a pair of sharp horns, as in fig. 41. where the insect is shown magnified about 400 times.

Some of these creatures being kept with water in a vial, most of them died in two days; and the rest, having spun themselves transparent cases (which were fastened either to the sides of the glass, or to pieces of grass put into it), seemed to be changed into a kind of chrysalis: but before taking this form, they appeared as in fig. 43. which shape they likewise assumed when weary with catching their food, or when lying in wait for it. None of them lived above three days; and though fresh water was given them two or three times a-day, yet in a few hours it would stink to a degree scarce conceivable, and that too at several yards distance, though, in proportion to the water, all the included insects were not more than as 1 to 1,150,000. This makes it probable, that it is necessary for them to live in a rapid stream, lest they should be poisoned by the effluvia issuing from their own bodies, as no doubt they were in the vial.

33
Surprising
property of
spoiling
water.34
An aquatic
worm.

9. *A curious aquatic worm.* This animalcule is shown, magnified, at fig. 31. It is found in ditch-water; and is of various sizes, from $\frac{1}{40}$ to $\frac{1}{2}$ an inch in length. About the head it has somewhat of a yellowish colour; but all the rest of the body is perfectly colourless and transparent, except the intestines, which are considerably opaque, and disposed as in the figure. Along its sides are several papillæ, with long hairs growing from them: it has two black eyes, and is very nimble. But the most remarkable thing in this creature is a long horn or proboscis; which, in the large ones, may be seen with the naked eye, if the water is clear, and is sometimes $\frac{1}{10}$ of an inch in length: this it waves to and fro as it moves in the water, or creeps up the side of the glass; but it is not known whether it is hollow, or of what use it is to the creature itself.

35
Its horn or
proboscis.36
Spermatic
animals,
when dis-
covered.

10. *Spermatic Animals, and Animalcula Infusoria.* The discovery of living animalcules in the semen of most animals is claimed by Mr Lewenhoeck and Mr Nicholas Hartsoeker; who both say they published it about the end of the year 1677 or beginning of 1678: but Mr Lewenhoeck having given the most particular description of, and made by far the greatest number of experiments concerning them, the discovery is commonly attributed to him.

37
General ap-
pearance
the same in
every ani-
mal.

According to this naturalist, these animalcules are found in the semen masculinum of every kind of animal; but their general appearance is very much the same, nor doth their size differ in proportion to the bulk of the animal to which they belong. The bodies of all of them seem to be of an oblong oval form, with long tapering slender tails issuing from them; and as by this shape they resemble *tadpoles*, they have been frequently called by that name; tho' the tails of them, in proportion to their bodies, are much longer than the tails of tadpoles are: and it is observable, that the animalcules in the semen of fishes have tails much longer and more slender than the tails of those in other ani-

mals; insomuch, that the extremity of them is not to be discerned without the best glasses, and the utmost attention. Fig. 21. N^o 1, 2, 3, 4, represent the spermatic animalcula of the rabbit; and N^o 5, 6, 7, 8, those of a dog; according to Mr Lewenhoeck.

The numbers of these animalcula are inconceivable. On viewing with a microscope the milt or semen masculinum of a living cod-fish, innumerable multitudes of animalcules were found therein, of such a diminutive size, that he supposed at least 10,000 of them capable of being contained in the bulk of a grain of sand; whence he concludes, that the milt of this single fish contained more living animalcules than there are to be found people living in the whole world. To find the comparative size of these animalcules, Mr Lewenhoeck placed an hair of his head near them; which hair, thro' his microscope, appeared an inch in breadth; and he was satisfied, that at least 60 such animalcules could easily lie within that diameter; whence their bodies being spherical, it follows, that 216,000 of them are but equal to a globe whose diameter is the breadth of a hair. He observed, that when the water wherewith he had diluted the semen of a cod-fish was exhaled, the little bodies of the animalcules burst in pieces; which did not happen to those in the semen of a ram: and this he imputes to the greater firmness and consistency of the latter as the flesh of a land-animal is more compact than fish.

These animalcules appear to be very vigorous, and tenacious of life; for they may be observed to move long after the animal from which they are taken is dead. They have this peculiarity also, that they are continually in motion, without the least rest or intermission, provided there is fluid sufficient for them to swim about in. These animalcula are peculiar to the semen; nothing that has the least token of life being discovered, by the best glasses, either in the blood, spittle, urine, gall, or chyle. Great numbers, however, are to be found in the whitish matter that sticks between the teeth; some of which are of an oval figure, and others resemble eels.

The *Animalcula Infusoria*, take their name from their being found in all kinds either of vegetable or animal infusions. Indeed, there is scarce any kind of water, unless impregnated with some mineral substance, but what will discover living creatures.—Mr Lewenhoeck says, that at first he could discern no living creatures in rain-water; but after standing some days, he discovered innumerable animalcules, many thousands of times less than a grain of sand, and in proportion to a mite as a bee is to a horse.—In other rain-water, which had likewise stood some time, he found the smallest sort he had ever seen; and, in a few days more, met with others eight times as big as these, and almost round.—In another quantity of rain-water, that had been exposed like the former, he discovered a kind of animalcules with two little horns in continual motion. The space between the horns was flat, though the body was roundish, but tapering a little towards the end; where a tail appeared, four times as long as the body, and the thickness of a spider's web. He observed several hundreds of these within the space a grain of sand would occupy. If they happened on the least filament or string, they were entangled in it; and then would extend their bodies into an oblong round, and struggle hard to disengage their tails. He observed a second

Animal-
cule.

Pl. XXXII.

38
Inconceiv-
able num-
ber and mi-
nuteness.39
Are conti-
nually in
motion.40
Animalcula
Infusoria.41
Mr Lewen-
hoeck's ac-
count of a-
nimalcules
in rain wa-
ter.

fort

Animal-
cule.

fort of an oval figure, and imagined the head to stand at the sharpest end. The body was flat, with several small feet moving exceeding quick, but not discernible without a great deal of attention. Sometimes they changed their shape into a perfect round, especially when the water began to dry away. He met also with a third sort, twice as long as broad, and eight times smaller than the first: yet in these he discerned little feet, whereby they moved very nimbly. He perceived likewise a fourth sort, a thousand times smaller than a louse's eye, and which exceeded all the rest in briskness: he found these turning themselves round, as it were upon a point, with the celerity of a top. And he says, there were several other sorts.

42
Surprising
production
of these ani-
malcules.

The production of *animalcula infusoria* is very surprising. In four hours time, an infusion of cantharides has produced animalcula less than even the tails of the spermatic animals we have already described. Neither do they seem to be subject to the fate of other animals; but, several kinds of them at least, by dividing themselves in two, to enjoy a sort of immortality. Nor do the common methods by which other animals are destroyed, seem to be effectual for destroying their vital principle. Hot mutton-gravy, secured in a phial with a cork, and afterwards set among hot ashes to destroy as effectually as possible every living creature that could be supposed to exist in it, has nevertheless been found swarming with animalcules after standing a few days. In the Philosophical Transactions, Vol. LIX. we have the following curious account, given us by Mr Ellis, of animalcules produced from an infusion of potatoes and of hempseed.

43
Mr Ellis's
account of
animalcules
from infu-
sion of po-
tatoes.

"On the 25th of May 1768, Fahrenheit's thermometer 70°, I boiled a potato in the New-River water till it was reduced to a mealy consistence. I put part of it, with an equal proportion of the boiling liquor, into a cylindrical glass-vessel that held something less than half a wine-pint, and covered it close immediately with a glass-cover. At the same time, I sliced an un-boiled potato; and, as near as I could judge, put the same quantity into a glass-vessel of the same kind; with the same proportion of New River water not boiled; and covered it with a glass cover; and placed both vessels close to each other.

"On the 26th of May, 24 hours afterwards, I examined a small drop of each, by the first magnifier of Wilson's microscope, whose focal distance is reckoned at $\frac{1}{30}$ th part of an inch; and, to my amazement, they were both full of animalcula of a linear shape, very distinguishable, moving to and fro with great celerity; so that there appeared to be more particles of animal than vegetable life in each drop.

"This experiment I have repeatedly tried, and always found it to succeed in proportion to the heat of the circumambient air; so that even in winter, if the liquors are kept properly warm, at least in two or three days the experiment will succeed.

"What I have observed are infinitely smaller than spermatic animals, and of a very different shape: the truth of which every accurate observer will soon be convinced of, whose curiosity may lead him to compare them; and I am persuaded he will find they are no way akin.

"At present I shall pass over many other curious observations, which I have made on two years expe-

riments, in order to proceed to the explaining a hint which I received last January from M. de Saussure of Geneva, when he was here; which is, that he found one kind of these animalcula infusoria that increase by dividing across into nearly two equal parts.

"I had often seen this appearance in various species a year or two ago, as I found upon looking over the minutes I had taken when I made any new observation; but always supposed the animal, when in this state, to be in coition.

"Not hearing, till after M. de Saussure left this kingdom, from what infusion he had made his observation; his friend Dr de la Roche of Geneva informed me, the latter end of February last, that it was from hempseed.

"I immediately procured hempseed from different seedsmen in distant parts of the town. Some of it I put into New-River water, some into distilled water, and some I put into very hard pump-water. The result was, that in proportion to the heat of the weather, or the warmth in which they were kept, there was an appearance of millions of minute animalcula in all the infusions; and, some time after, some oval ones made their appearance, as at fig. 3. b, c. These were much larger than the first, which still continued; these wriggled to and fro in an undulatory motion, turning themselves round very quick all the time that they moved forwards. I was very attentive to see these animals divide themselves; and at last I perceived a few of the appearance of fig. 3. a, as it is represented by the first magnifier of Wilson's microscope; but I am so well convinced by experience that they would separate, that I did not wait to see the operation: however, as the following sketches, which I have drawn from five other species, will very fully explain this extraordinary phenomenon, there will be no difficulty in conceiving the manner of the first. See fig. 4, 5, 6, 7, 8.

"The proportion of the number of these animals which I have observed to divide in this manner, to the rest, is scarce 1 to 50; so that it appears rather to arise from hurts received by some few animalcula among the many, than to be the natural manner in which these kinds of animals multiply; especially if we consider the infinite quantity of young ones which are visible to us through the transparent skins of their bodies, and even the young ones that are visible in those young ones while in the body of the old ones.

"But nothing more plainly shows them to be zoophytes than this circumstance, That when, by accident, the extremity of their bodies has been shrivelled for want of a supply of fresh water, the applying more fresh water has given motion to the part of the animal that was still alive; by which means, this shapeless figure has continued to live and swim to and fro all the time it was supplied with fresh water.

"I cannot finish this part of my remarks on these animals, without observing, that the excellent Linnæus has joined the *berœ* with the *volvox*, one of the animalcula infusoria. The *berœ* is a marine animal, found on our coasts; of a gelatinous transparent nature, and of an oval or spherical form, about half an inch to an inch diameter; divided like a melon into longitudinal ribs, each of which is furnished with rows of minute fins; by means of which, this animal, like the animalcula infusoria, can swim in all directions with great

swiftness

Animal-
cule.

44
From an in-
fusion of
hempseed.

45
Divide
themselves
in two.

46
Berœ de-
scribed.

Animal-
cule.Animal-
cule.47
Method of
discovering
the fins of
animal-
cules.

swiftness. In the same manner I have seen most of those minute animals move so swift that we could not account for it, without supposing such a provision in nature, which is really true, but cannot be seen till the animals grow faint for want of water; then, if we attend, we may with good glasses plainly discover them.

"I have lately found out, by mere accident, a method to make their fins appear very distinctly, especially in the larger kind of animalcula, which are common to most vegetable infusions; such as the terrebella. This has a longish body, with a cavity or groove at one end, like a gimlet: by applying, then, a small stalk of the horse-shoe geranium (or geranium zonale of Linnæus), fresh broken, to a drop of water in which these animalcula are swimming, we shall find that they will become torpid instantly; contracting themselves into an oblong oval shape, with their fins extended like so many bristles all round their bodies. The fins are in length about half the diameter of the middle of their bodies. Before I discovered this expedient, I tried to kill them by different kinds of salts and spirits; but though they were destroyed by this means, their fins were so contracted, that I could not distinguish them in the least. After lying in this state of torpidity for two or three minutes, if a drop of clean water is applied to them, they will recover their shape, and swim about immediately, rendering their fins again invisible."

Fig. 3, 4, 5, 6, 7, 8. represent different species of animalcula infusoria, mentioned by Mr Ellis as belonging to the genus of volvox of Linnæus.

Fig. 3. represents the volvox ovalis, or egg-shaped volvox; at (b) and (c) it is expressed in its natural shape; at (a) the manner in which it becomes two animals, by separating across the middle. This was found in the infusion of hempseed; but is found in other vegetable infusions, particularly that of tea-seed.

Fig. 4. is the volvox torquilla, or wryneck. At (a) is represented its divided state; at (b) and (c) its natural state; this is common to most vegetable infusions, as is the following.

Fig. 5. is the volvox volutans, or the roller. At (a) the animal is separated, and becomes two distinct beings, each swimming about and providing for itself: this is often the prey of another species of this genus, especially while it is weak by this separation, not being so active for some time till it can recover itself. At (c) the animal appears to be hurt on one side; this impression in a little time is succeeded by another in the opposite side, as at (b), which soon occasions a division. At (d) is the side-view, and at (e) the front-view, of the natural shape of the animal.

Fig. 6. is the volvox oniscus, or wood-louse. At (a) is the natural shape of it, as it appears full of little hairs both at the head and tail; with those at the head, it whirls the water about to draw its prey to it; the feet, which are many, are very visible, but remarkably so in a side-view at (d). At (b) it is represented beginning to divide; and at (c) the animals are ready to part: in this state, as if in exquisite pain, they swim round and round, and to and fro, with uncommon velocity, violently agitated till they get asunder. This was found in an infusion of different kinds of pine-branches.

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Fig. 7. is the volvox terrebella, or the gimlet. This is one of the largest of the kind, and is very visible to the naked eye. It moves along swiftly, turning itself round as it swims, just as if boring its way. (a) and (b) are two views of its natural shape, (c) shows the manner of its dividing. When they are separated, the lower animal rolls very awkwardly along, till it gets a groove in the upper part. (d) represents one of them lying torpid, by means of the juice of the horse-shoe geranium, with its fins extended. This animal is found in many infusions, particularly of grass or corn.

Fig. 8. is the volvox vorax, or glutton. This animal was found in an infusion of the Tartarian pine; it varies its shape very much, contracting and extending its proboscis, turning it to and fro, in various directions, as at a, b, c, d, e. It opens its proboscis underneath the extremity, when it seizes its prey. The less active animals, that have lately been divided, such as those at fig. 3. (a), and at fig. 4. (a), serve it as food, when they come in its way: these it swallows down instantly, as it is represented at fig. 8. h and i. At (f) it is ready to divide, and at (g) it is divided; where the hinder part of the divided animal has got a proboscis or beak, to procure nourishment for itself, and soon becomes a distinct being from the fore-part.

Thus we have given as full an account as our limits would admit, of the most curious kinds of animalcules that have hitherto been observed. We cannot, however, dismiss this subject, without taking notice of some of the most remarkable hypotheses which have been formed concerning their nature and origin.

Before the invention of microscopes, the doctrine of equivocal generation, both with regard to animals and plants of some kinds, was universally received: but this instrument soon convinced every intelligent person, that those plants which formerly were supposed to be produced by equivocal generation arose from seeds, and the animals, in like manner, from a male and female. But as the microscope threw light upon one part of nature, it left another involved in darkness: for the origin of the animalcula infusoria, or of the spermatic animals already mentioned, remains as yet as much unknown as that of many other kinds was when the doctrine of equivocal generation reigned in full force.

The discovery of spermatic animalcules was thought to throw some light on the mysterious affair of generation itself, and these minute creatures were imagined to be each of them individuals of the same species with the parent. Here the infinite number of these animalcules was an objection, and the difficulty remained as great as before; for, as every one of these animalcules behaved to be produced from a male and female, to explain their origin by animalcular generation in the same manner, was only explaining generation by itself.

This hypothesis, therefore, having proved unsatisfactory, others have been invented. M. Buffon, particularly, hath invented one, by which he at once annihilates the whole animalcular world; and in this he hath been followed by several very ingenious philosophers. For a particular account of this, so far as it concerns generation, we must refer to that article; but as he gives such a particular account of his having examined the human semen, that we cannot doubt of his accuracy, we shall here contrast his account with that of Mr Lewenhoeck already mentioned.

E

Having

48
Doctrine of
equivocal
generation
exploded.49
Supposed
discovery
concerning
generation.

Animal-
cule.50
M. Buffon's
experi-
ments on
the human
semen.

Having procured the seminal vessels of a man who died a violent death, he extracted all the liquor from them while they were still warm; and having examined a drop of it with a double microscope, it had the appearance, fig. 9. Large filaments appeared, which in some places spread out into branches, and in others intermingled with one another. These filaments clearly appeared to be agitated by an internal undulatory motion, like hollow tubes, which contained some moving substance. He saw distinctly this appearance changed for that fig. 10. Two of these filaments, which were joined longitudinally, gradually separated from each other in the middle, alternately approaching and receding, like two tense cords fixed by the ends, and drawn asunder in the middle. These filaments were composed of globules that touched one another, and resembled a chaplet of beads. After this, he observed the filaments swelled in several places, and perceived small globular bodies issue from the swelled parts, which had a vibratory motion like a pendulum. These small bodies were attached to the filaments by small threads, which gradually lengthened as the bodies moved. At last, the small bodies detached themselves entirely from the filaments, drawing after them the small thread, which looked like a tail. When a drop of the seminal liquor was diluted, these small bodies moved in all directions very briskly; and had he not seen them separate themselves from the filaments, he would, he says, have thought them to be animals. The seminal matter was at first too thick, but gradually became more fluid; and, in proportion as its fluidity increased, the filaments disappeared, but the small bodies became exceedingly numerous. Each of them had a long thread or tail attached to it, from which it evidently endeavoured to get free. Their progressive motion was extremely slow, during which they vibrated to the right and left, and at each vibration they had a rolling unsteady motion in a vertical direction.

At the end of two or three hours, the seminal matter becoming still more fluid, a greater number of these moving bodies appeared. They were then more free of incumbrances; their tails were shorter; their progressive motion was more direct, and their horizontal motion greatly diminished. In five or six hours, the liquor had acquired almost all the fluidity it could acquire, without being decomposed. Most of the small bodies were now disengaged from their threads; their figure was oval. They moved forward with considerable quickness, and, by their irregular motions backward and forward, they had now more than ever the appearance of animals. Those that had tails adhering to them, seemed to have less vivacity than the others: and of those that had no tails, some altered both their figure and their size. In twelve hours, the liquor had deposited at the bottom of the vial a kind of ash-coloured gelatinous substance, and the fluid at top was almost as transparent as water. The little bodies being now entirely freed from their threads, moved with great agility, and some of them turned round their centres. They also often changed their figures, from oval becoming round, and often breaking into smaller ones. Their activity always increased as their size diminished. In 24 hours, the liquor had deposited a greater quantity of gelatinous matter, which, being with some difficulty diluted in water, exhibited an appearance somewhat resembling lace. In the clear

semen itself only a few small bodies were now seen moving; next day, these were still farther diminished; and after this nothing was to be seen but globules, without the least appearance of motion. Most of the above-mentioned appearances are shown fig. 10, 11, 12, 13, 14, 15, 16. Fig. 17, and 18. represent an appearance of the globules in another experiment, in which they arranged themselves in troops, and passed very quickly over the field of the microscope. In this experiment they were found to proceed from a small quantity of gelatinous mucilage.

From these experiments, M. Buffon concludes, that what have been called spermatic animals, are not creatures really endowed with life, but something proper to compose a living creature; and he distinguishes them by the name of *organic particles*. The same individual kinds of animals he declares he has found in the fluids separated from the ovaria of females: and for the truth of this appeals to the testimony of Mr Needham, who was an eye-witness of his experiments. He also brings an additional proof of his doctrine from Mr Needham's observations on the milt of the *calmar*, a species of cuttle-fish. Here the spermatic animals, at least what have the only appearance of life, are vastly larger than in any other creature, so as to be plainly visible to the naked eye. When magnified, they appear as at fig. 19, and 20. *a*. Their first appearance is at fig. 19. *a* and *b*, when they resemble springs inclosed in a transparent case. These springs were equally perfect at first as afterwards; only in time they contracted themselves, and became like a kind of screw. The head of the case is a species of valve which opens outward, and through which every thing within may be forced out. It contains, besides, another valve *b*, a little barrel *c*, and a spongy substance *d e*. Thus the whole machine consists of an outer transparent cartilaginous case *a*, the superior extremity of which is terminated by a round head formed by the case itself, and performs the office of a valve. This external case contains a transparent tube: which includes the spring, a piston or valve, a little barrel, and a spongy substance. The screw occupies the superior part of the tube and case, the piston and barrel are situated in the middle, and the spongy substance occupies the inferior part. These machines pump the liquor of the milt; the spongy substance is full of this liquor; and, before the animal spawns, the whole milt is only a congeries of these bodies which have sucked up all the liquor of it. Whenever these small machines are taken out of the body of the animal, and put in water, or exposed to the air, they begin to act, as represented fig. 19, and 20.; the spring mounts up, and is followed by the piston, the barrel, and the spongy substance which contains the liquor: and, as soon as the spring and the tube in which it is contained begin to issue out of the case, the spring plaits, and the whole internal apparatus moves, till the spring, the piston, and the barrel, have entirely escaped from the case. When this is effected, all the rest instantly follow, and the milky liquor which had been pumped in, and confined in the spongy substance, runs out through the barrel.

According to this account, the milt of the *calmar* contains no animalcules; and therefore we may from analogy conclude, that the small moving bodies which are to be seen in the semen of other animals, are not really

Animal-
cule.51
Needham's
experi-
ment on
the milt
of the *cal-*
mar.

Fig. 20.

52
Conclusion
against the
existence of
animal-
cules.

Animal-
cule.

really creatures endowed with life. M. Buffon extends the analogy still further; and concludes, that all the moving bodies which are to be found in the infusions either of animal or vegetable substances are of a similar nature. "To discover (says he) whether all the parts of animals, and all the seeds of plants, contained moving organic particles, I made infusions of the flesh of different animals, and of the seeds of more than 20 different species of vegetables; and after remaining some days in close glasses, I had the pleasure of seeing organic moving particles in all of them. In some they appeared sooner, in others later; some preserved their motions for months, and others soon lost it. Some at first produced large moving globules resembling animals, which changed their figure, split, and became gradually smaller. Others produced only small globules, whose motions were extremely rapid; and others produced filaments, which grew longer, seemed to vegetate, and then swelled and poured forth torrents of moving globules."

53
Baron
Munchan-
sen's theory.

54
Disproved
by Mr Ellis.

This last observation gave rise to a new system. Baron Munchansen, perceiving that the last-mentioned moving globules, after moving for some time, began again to vegetate, concluded that they were first animals and then plants.—This strange hypothesis Mr Ellis has overturned in the paper already quoted; in which he asserts, that they are no other than the seeds of that genus of fungi called *mucor* or *mouldiness*, and that their motion is owing to numbers of minute animalcules attacking them for food. "Having (says he), at the request of Dr Linnæus, made several experiments on the infusion of mushrooms in water, in order to prove the theory of Baron Munchansen, that their seeds are first animals, and then plants (which he takes notice of in his System of Nature, p. 1326, under the genus of chaos, by the name of *chaos fungorum seminum*), it appeared evidently, that the seeds were put into motion by very minute animalcules, which proceeded from the putrefaction of the mushroom; for, by pecking at these seeds, which are reddish, light, round bodies, they moved them about with great agility in a variety of directions; while the little animals themselves were scarce visible, till the food they had eaten had discovered them. The satisfaction I received from clearing up this point, led me into many other curious and interesting experiments.

"The ingenious Mr Needham supposes these little transparent ramified filaments, and jointed or coralloid bodies, which the microscope discovers to us on the surface of moist animal and vegetable infusions when they become putrid, to be zoophytes, or branched animals: but to me they appear, after a careful scrutiny with the best glasses, to be of that genus of fungi called *mucor*, or *mouldiness*; many of which Michelius has figured, and Linnæus has accurately described.

"Their vegetation is so amazingly quick, that they may be perceived in the microscope even to grow and feed under the eye of the observer.

"Mr Needham has pointed out to us a species that is very remarkable for its parts of fructification. (See Philosophical Transactions, vol. xlv. tab. 5. fig. 3. a, A.) This, he says, proceeded from an infusion of bruised wheat.

"I have seen the same species arise from the body of a dead fly, which was become putrid by lying floating for some time in a glass of water, where some flowers

had been in the month of August 1768. This species of *mucor* sends forth a mass of transparent filamentous roots; from whence arise hollow stems, that support little oblong oval seed-vessels, with a hole on the top of each. From these I could plainly see minute globular seeds issue forth in great abundance with an elastic force, and turn about in the water as if they were animated.

"Continuing to view them with some attention, I could just discover, that the putrid water which surrounded them was full of the minutest animalcula; and that these little creatures began to attack the seeds of the *mucor* for food, as I have observed before in the experiment on the seeds of the larger kind of fungi or mushrooms. This new motion continued the appearance of their being alive for some time longer: but, soon after, many of them arose to the surface of the water, remaining there without motion; and a succession of them afterwards coming up, they united together in little thin masses, and floated to the edge of the water, remaining there quite inactive during the time of observation.

"As this discovery cleared up many doubts which I had received from reading Mr Needham's learned dissertation, I put into the glass several other dead flies; by which means this species of *mucor* was propagated so plentifully, as to give me an opportunity of frequently trying the same experiment to my full satisfaction.

"Lastly, These jointed coralloid bodies, which Mr Needham calls *chaplets* and *pearl necklaces*, I have seen frequently very distinctly. These appear not only on an infusion of bruised wheat when it becomes putrid, but on most other bodies when they throw up a viscid scum and are in a state of putrefaction. These, then, are evidently no more than the most common *mucor*, the seeds of which are every where floating in the air; and bodies in this state afford them a natural proper soil to grow upon. Here they send downwards their fine transparent ramified roots into the moisture which they float upon; and from the upper part of the scum, their jointed coralloid branches rise full of seed into little grove-like figures. When a small portion of these branches and seeds are put into a drop of the same putrid water upon which the scum floats, many of these millions of little animalcula with which it abounds, immediately seize them as food, and turn them about with a variety of motions, as in the experiments on the seeds of the common mushrooms, either singly, or two or three seeds connected together; answering exactly to Mr Needham's description, but evidently without any motion of their own, and consequently not animated."

M. Buffon, however, is not content with denying life only to those beings where the signs of it are the most equivocal; but includes in the same rank of organic particles, almost every animal too small to be discovered by the naked eye, and even some of those whose motions are evidently perceptible to the eye. "Almost all microscopic animals," says he, "are of the same nature with the moving bodies in the seminal fluids and infusions of animal and vegetable substances. The eels in paste, in vinegar, &c. are all of the same nature, and derived from the same origin. There are, perhaps, as many beings that either live or vegetate, produced by a fortuitous assemblage of organic particles,

Animal-
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opinion of
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kinds of ani-
malcules.

Animal-
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cles, as by a constant and successive generation. Some of them, as those of the calmar, are only a kind of machines, which, though exceedingly simple, are very active. Others, as the spermatic animalcules, seem to imitate the movements of animals. Others resemble vegetables in their manner of growth and extension. There are others, as those of blighted wheat, which at pleasure can be made alternately either to live or die, and it is difficult to know to what they should be compared. There are still others, and in great numbers, which are at first a kind of animals, then become a species of vegetables, and again return alternately to their vegetable state. The eels in paste have no other origin than the union of the organic particles of the most essential part of the grain. The first eels that appear are certainly not produced by other eels; but tho' they are not propagated themselves, they fail not to engender other living eels. By cutting them with the point of a lancet, we discover smaller eels issuing in great numbers out of their bodies. The body of this animal seems to be only a sheath or sac, containing a multitude of smaller animals, which perhaps are other sheaths of the same kind, in which the organic matter is assimilated into the form of eels."

56

His reason-
ing incon-
clusive.

Though we can by no means pretend to account for the appearance of these animalcules, yet we cannot help observing, that our ignorance of the cause of any phenomenon is no argument against its existence. Though we are not able to account in a satisfactory manner for the origin of the native Americans, we suppose M. Buffon himself would reckon it absurd to maintain that the Spaniards on their arrival there found only *organic particles* moving about in disorder. The case is the very same with the eels in paste. They are exceedingly minute in comparison with us; but, with the solar microscope, Mr Baker has made them assume a more respectable appearance, so as to have a diameter of an inch and an half, or two inches, and a length proportionable. They swam up and down very briskly; the motion of their intestines was plainly visible; when the water dried up, they died with apparent agonies, and their mouths gaped very wide. Were we to find a creature of the size of this magnified eel, gasping in a place where water had lately been, we certainly would never conclude it to be an *organic particle*, or a fortuitous assemblage of them; but a fish. Why then should we conclude otherwise with regard to the eel while in its natural state, than that it is a little fish? In reasoning on this subject, we ought always to remember, that, however essential the distinction of bodies into great and small may appear to us, they are not so to the Deity; with whom, as Mr Baker well expresses himself, "an atom is as a world, and a world but as an atom."—Were the Deity to exert his power for a little, and give a natural philosopher a view of a quantity of paste filled with eels, from each of whose bodies the light was reflected as when it passes through a solar microscope; instead of imagining them organic particles, the paste would appear like a little mountain, he would probably look upon the whole as a monstrous assemblage of serpents, and be afraid to come near them. Wherever, therefore, we discover beings to appearance endowed with the principle of self-preservation, or whatever else we make the characteristic of animals, neither the smallness of their size, nor the impossibility of

our knowing how they come there, ought to cause us doubt of their being really animated.—At the same time, it must also be remembered, that *motion* is not always a characteristic of animal life, even though the moving bodies should avoid one another, or any seeming obstacle placed in their way. We know, that inanimate bodies, when electrified, will avoid others endowed with an electricity of the same kind, and adhere to those which have the opposite one. As we are by no means acquainted with the utmost powers of electricity, but on the contrary, from what we do know of it have all the reason in the world to conclude that it can produce effects utterly beyond our comprehension, it is impossible for us to know what share it may have in producing the motions observed in vegetable-infusions, or in the semen of animals.—We may also further observe, that though in Mr Ellis's experiment of the boiled potato he took it for granted that every seed of animal life would be destroyed by the boiling water, yet even this cannot be proved; nay, on the contrary, it hath been proved by undeniable experiments, that the human body itself hath endured a heat of 240 degrees of Fahrenheit (28 degrees above that of boiling water) without injury. The eggs of these animalcula might therefore be strong enough to resist the heat hitherto used in Mr Ellis's or any other experiment.

A considerable objection to the existence of animalcules in the semen, or any other part of animal bodies, must arise from the total exclusion of air, which is found so necessary to the life of larger animals. Some instances, however, have been observed of large animals being found in such situations as they could not possibly have enjoyed the least benefit from the air for a great number of years; and in this state they have not only lived, but lived much longer than they would otherwise have done.

In Toulon harbour and the road, are found solid hard stones, and perfectly entire; containing, in different cells, secluded from all communication with the air, several living shell-fish, of an exquisite taste, called *Dactyli*, i. e. Dates: to come at these fish, the stones are broken with mauls. Also, along the coast of Anconia, in the Adriatic, are stones usually weighing about 50 pounds, and sometimes even more; the outside rugged, and easily broken, but the inside so hard, as to require a strong arm and an iron maul to break them; within them, and in separate niches, are found small shell-fish, quite alive, and very palatable, called *Solenes* or *Cappe lunghe*. These facts are attested by Gassendi, Blondel, Mayol, the learned bishop of Salturara, and more particularly by Aldrovandi a physician of Bologna. The two latter speak of it as a common fact, which they themselves saw.

In the volume for 1719, of the Academy of Sciences at Paris, is the following passage:

"In the foot of an elm, of the bigness of a pretty corpulent man, three or four feet above the root, and exactly in the centre, has been found a live toad, middle-sized, but lean, and filling up the whole vacant space: no sooner was a passage opened, by splitting the wood, than it scuttled away very hastily: a more firm and sound elm never grew; so that the toad cannot be supposed to have got into it. The egg whence it was formed, must, by some very singular accident, have been

Animal-
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Animals
sometimes
found living
in solid bo-
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Animal-
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been lodged in the tree at its first growth. There the creature had lived without air, feeding on the substance of the tree, and growing only as the tree grew. This is attested by Mr Hubert, professor of philosophy at Caen."

The volume for the year 1731 has a similar observation, expressed in these words:

"In 1719, we gave an account of a fact, which, though improbable, was well attested; that a toad had been found living and growing in the stem of a middling elm, without any way for the creature to come out or to have got in. M. Seigne, of Nantes, lays before the academy a fact just of the very same nature, except that, instead of an elm, it was an oak, and larger than the elm, which still heightens the wonder. He judges, by the time requisite for the growth of the oak, that the toad must have subsisted in it, without air, or any adventitious aliment, during 80 or 100 years. M. Seigne seems to have known nothing of the fact in 1719."

With the two foregoing may be classed a narrative of Ambrose Paré, chief surgeon to Henry III. king of France, who, being a very sensible writer, relates the following fact, of which he was an eye-witness:

"Being (says he) at my feat, near the village of Meudon, and over-looking a quarry-man whom I had set to break some very large and hard stones; in the middle of one we found a huge toad, full of life, and without any visible aperture by which it could get there. I began to wonder how it received birth, had grown and lived; but the labourer told me, it was not the first time he had met with a toad, and the like creatures, within huge blocks of stone, and no visible opening or fissure."

Observations of living toads, found in very hard and entire stones, occur in several authors, particularly Baptist Fulgosa doge of Genoa, the famous physicians Agricola and Horstius, and lord Verulam: others give very specious accounts of snakes, frogs, crabs, and lobsters, being found alive, inclosed within blocks of marble, rocks, and large stones.

An instance similar to these, of the truth of which we have no reason to doubt, was observed in this country in the year 1773, where a large toad was found in the middle of a piece of coal having not the least visible crack or fissure.

⁵⁸
The subject
still obscure. Upon the whole, therefore, though philosophers are not yet able to discover how these minute creatures are produced; yet, that there really are animals much smaller than what we can discern with our naked eye, seems to be indisputable. The subject, however, is still evidently obscure, and will no doubt require the utmost attention of philosophers, as well as further improvements in the construction of microscopes, fully to investigate it.

Animalcula are said to be the cause of various disorders. The itch, from several experiments, is affirmed to be a disorder arising from the irritations of a species of animalcula found in the pustules of that ailment; whence the communication of it by contact from one to another is easily conceived, as also the reason of the cure being effected by cutaneous applications. On this foundation some have attributed the small-pox and measles, and infectious diseases; others the epilepsy, &c. to animalcules. Languis goes farther, and

pretends to reduce all diseases in general to the same principle. A late writer at Paris, who assumed the title of an English physician, has done more. He not only accounts for all diseases, but for the operations of all medicines, from the hypothesis of animalcules. He had peculiar animals for every disease; scorbutic animalcules, podagrical animalcules, variolous animalcules, &c. all at his service. Journ. des Sçav. tom. lxxxii. p. 535, &c.

But as most discoveries in natural philosophy have laid a foundation for the warm imaginations of some men to form visionary theories, to the great prejudice of real knowledge; so those relating to animalcula have been drawn in, however improperly, to support the most whimsical and chimerical systems.

ANIMALCULES Invisible.—Naturalists suppose another species or order of invisible animalcules, viz. such as escape the cognizance even of the best microscopes, and give many probable conjectures in relation to them. Reason and analogy give some support to the existence of infinite imperceptible animalcules. The naked eye, say some, takes in from the elephant to the mite; but there commences a new order reserved only for the microscope, which comprehends all these from the mite to those 27 millions of times smaller; and this order cannot be yet said to be exhausted, if the microscope be not arrived at its last perfection. See further on this subject the article MICROSCOPE.

ANIMATED, or ANIMATE, in a general sense, denotes something endowed with animal-life. It also imports a thing to be impregnated with vermin or animalcules.

ANIMATED Horse-hairs. See *HORSE-HAIRS*.

ANIMATION signifies the informing an animal body with a soul.—The different hypotheses of physicians and philosophers, concerning the time of animation, have had their influence on the penal laws made against artificial abortions: it having been made capital to procure miscarriage in the one state, while in the other it was only deemed a venial crime. The emperor Charles V. by a constitution published in 1532, put the matter on another footing; instead of the distinction of an animated and unanimated foetus, he introduced that of a vital and non-vital foetus, as a thing of more obvious and easy decision, and not depending on any system either of creation, traduction, or infusion. Accordingly a foetus is said, in a legal sense, to be animated, when it is perceived to stir in the womb; which usually happens about the middle of the term of gestation.

ANIME, in heraldry, a term used when the eyes of a rapacious creature are borne of a different tincture from the creature itself.

ANIME, a resin exuding from the trunk of a large American tree, called by Piso *jetaiba*, by the Indians *courbaril*, (a species of *HYMENÆA*). This resin is of a transparent amber colour, a light agreeable smell, and little or no taste. It dissolves entirely, but not very readily, in rectified spirit of wine; the impurities, which are often in large quantity, remaining behind. The Brazilians are said to employ anime in fumigations for pains and aches proceeding from a cold cause: with us, it is rarely, if ever, made use of for any medicinal purposes.

ANIMETTA, among ecclesiastical writers, denotes

Animal-
cule
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Animetta.

Aninga

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Anna.

notes the cloth wherewith the cup of the eucharist is covered

ANINGA, in commerce, a root which grows in the Antilles islands, and is pretty much like the China plant. It is used by sugar-bakers for refining the sugar.

ANJOU, a province and duchy of France, bounded on the east by Touraine, on the south by Poitou, on the west by Bretagne, and on the north by Maine. It is 70 miles in length, and in breadth 60. Through this province run five navigable rivers: the Loire, which divides it into two parts; the Vienne, the Toue, the Maienne, and the Sarthe,

The air is temperate, and the country agreeably diversified with hills and meadows. There are 33 forests of oak-trees mixed with beech. The country produces white-wine, wheat, barley, rye, oats, pease, beans, flax, hemp, walnuts, and some chestnuts. In lower Anjou they make cyder. There are fruit trees of all kinds, and pasture proper for horses. The greatest riches of the province consists in cows, oxen, and sheep. There are several coal and iron mines; and yet there are but two forges in the whole province. There are quarries of marble and of slate; as well as quarries of white stone, proper for building, on the side of the river Loire. Here are also several saltpetre-works and some glass-houses. The remarkable towns, besides Angers the capital, are Saumur, Brissac, Pons de Cea, La Fleche, and Beaufort.

ANIO, (Cicero, Horace, Priscian); ANIEN, (Statius); now *il Tevere*: a river of Italy, which falls into the Tiber, three miles to the north of Rome, not far from Antemnæ. It rises in a mountain near Treba, (Pliny); and, running through the country of the Æquiculi, or Æqui, it afterwards separated the Latins from the Sabines; but nearer its mouth, or confluence, it had the Sabines on each side. It forms three beautiful lakes in its course, (Pliny). In the territories of Tibur it falls from a great height, and there forms a very rapid cataract; hence the epithet *præceps*, and hence the steam caused by its fall, (Horace). *Anienus* is the epithet formed from it. (Virgil, Propertius): *Anienus* is also the god of the river, (Propertius, Statius).

ANISUM, or ANISE. See PIMPINELLA.

ANKER, a liquid measure at Amsterdam. It contains about 32 gallons English measure.

ANKLE, in anatomy, the joint which connects the foot to the leg.—We have an account of the menfes being regularly evacuated at an ulcer of the ankle, *Edin. Med. Obs.* vol. iii. art. 29.

ANN, or ANNAT, in Scots law, is half a year's stipend, which the law gives to the executors of ministers of the church of Scotland, over and above what was due to the minister himself, for his incumbency.

ANNA, one of the three principalities into which Arabia Deserta is divided.

ANNA, one of the chief cities of the above principality, and formerly a famed mart-town, is situated in Lat. 33. 57. and E. Long. 42. 10. on the river Euphrates, in a fruitful and pleasant soil. It has two streets, which are divided by the river. That on the Mesopotamia side is about two miles long, but thinly peopled, and by none but tradesmen; that on the opposite side is about six miles in length, and it is there

that the principal inhabitants of the city dwell. Every house has some ground belonging to it; and these grounds are loaded with noble fruit-trees, as lemons, oranges, citrons, quinces, figs, dates, pomegranates, olives, all very large and in great plenty. Some of the flat grounds are sown with corn and other grain, which yield likewise a considerable crop. This city is the common rendezvous of all the robbers that infest the country, and from which they disperse themselves into all parts of the Desert. Here they meet to consult; here they hold their grand council, and deliberate where to rob next with success. It is with great difficulty that the Turkish aga, and the janissaries, who are kept here, can levy the tribute imposed by the Turks on all the commodities carried through this city, which is one of the great thorough-fares for the passing of the caravans that go to and from Aleppo, Tripoli, Damascus, Bagdad, and some other parts of the Turkish empire.

ANNA Comnena. See COMNENA.

ANNABON. See ANNOBON.

ANNALE, in the church of Rome, a term applied to the masses celebrated for the dead during a whole year.

ANNALIS clavus, the nail which the Prætor, Consul, or Dictator, drove into the wall of Jupiter's temple annually upon the Ides of September, to show the number of years. But this custom was superseded by reckoning years by consulships. The ceremony was sometimes performed to avert the plague, &c.

ANNALS, in matters of literature, a species of history, which relates events in the chronological order wherein they happened. They differ from perfect history in this, that annals are but a bare relation of what passes every year, as a journal is of what passes every day; whereas history relates not only the transactions themselves, but also the causes, motives, and springs of actions. Annals require nothing but brevity; history demands ornament.—Cicero informs us of the origin of annals. To preserve the memory of events, the *Pontifex Maximus*, says he, wrote what passed each year, and exposed it on tables in his own house, where every one was at liberty to read: this they called *annales maximi*; and hence the writers who imitated this simple method of narrating facts were called *annalists*.

ANNAN, the capital of Annandale, a division of Dumfriesshire in Scotland; a small town, containing 500 or 600 inhabitants, and situated on a river of the same name, in W. Long. 3°. N. Lat. 54. 40. This place, which is a royal borough, has some trade in wine, and exports annually between 20 and 30,000 Winchester bushels (10 and 15,000 bolls) of corn. Vessels of about 250 tons can come within half a mile of the town; and of 60, as high as the bridge; which consists of five arches, defended by a gateway. A fabric for carding and spinning of cotton has lately been erected, and the town begins to increase. Here was formerly a castle; which was built by the Bruces after they became lords of Annandale. Upon the death of David II. the son of King Robert, in 1371, this castle (Lochmaben), and the lordship of Annandale, came to Thomas Randolph Earl of Murray, and went with his sister Agnes to the Dunbars, Earls of March: after their forfeiture it went to the Douglasses, who also lost it by the same fate; and then having come to Alex-

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Alexander duke of Albany, he, for rebelling against his brother King James III. and plundering the fair of Lochmaben in 1484, was also forfeit. Since which time it continued in the hands of the king, and became the great key of the west border.

The stewartry or district of Annandale, of which Lochmaben castle was the chief fortalice, is a fertile vale, 24 miles long, and about 14 miles broad: from its vicinity to England, and the continual incursions and predatory wars of the borderers, the greatest part of it was uncultivated and common: but since the beginning of the present century, or rather within the last thirty years, all these wastes and commons have been divided and brought into culture, and the country has assumed a new appearance; which may be ascribed not only to the division of the commons, but likewise to the improvement made in the roads, and particularly in the great western road from Edinburgh to London by Moffat, Gratney, and Carlisle, running through this vale, and carried on by some gentlemen of the country, after they had obtained an act of parliament for levying a toll to defray the expence of making and keeping it in repair.

Annandale formed a part of the Roman province of Valentia; and Severus's wall ending here, it abounds with Roman stations and antiquities. The camps at Birrens in Middlebie, and on the hill of Burnswark, are still entire, and their form is preserved; and the traces and remains of a military road are now visible in different parts of the country. The ruins of the house or castle of Auchincass, in the neighbourhood of Moffat, once the seat of that potent baron, Thomas Randolph, earl of Murray, lord of Annandale, and Regent of Scotland in the minority of David II. covers above an acre of ground, and even now conveys an idea of the plan and strength of the building. The ancient castle of Comlongan, formerly belonging to the Murays, earls of Annandale, and now to Lord Stormont, is still in a tolerable state of preservation; but except this castle and that of Hoddum, most of the other old fortalices and towers are now taken down, or in ruins.

Annandale is a marquissate belonging to the Johnstones, and the chief of the name.

ANNAND (William), dean of Edinburgh in Scotland, the son of William Annand minister of Air, was born at Air in 1633. Five years after, his father was obliged to quit Scotland with his family, on account of their loyalty to the king, and adherence to the episcopal government established by law in that country. In 1651, young Annand was admitted a scholar in University college in Oxford; and though he was put under the care of a presbyterian tutor, yet he took all occasions to be present at the sermons preached by the loyal divines in and near Oxford. In 1656, being then bachelor of arts, he received holy orders from the hands of Dr Thomas Fulwar, bishop of Ardfert or Kerry in Ireland, and was appointed preacher at Weston on the green near Bicester in Oxfordshire, where he met with great encouragement from Sir Francis Norris, lord of that manor. After he had taken his degrees of master of arts, he was presented to the vicarage of Leighton-Buzzard in Bedfordshire; where he distinguished himself by his edifying manner of preaching, till 1662, when he went into Scotland, in quality of chaplain to

John earl of Middleton, the king's high-commissioner to the church of that kingdom. In the latter end of the year 1663, he was instituted to the tolbooth church at Edinburgh, and from thence was removed some years after to the trone church of that city, which is likewise a prebend. In April 1676, he was nominated by the king to the deanery of Edinburgh; and in 1685, he commenced Doctor of Divinity in the university of St Andrew's. He wrote, 1. *Fides Catholica*; or, The Doctrine of the Catholic Church in eighteen grand Ordinances, referring to the word, sacraments, and prayer, in purity, number, and nature, catholically maintained, and publicly taught, against heretics of all sorts. Lond. 1661-2, 4to. 2. Solutions of many proper and profitable questions, suitable to the nature of each Ordinance, &c. printed with the *Fides Catholica*. 3. *Panem Quotidianum*; or, A short Discourse, tending to prove the legality, decency, and expediency, of set forms of prayers in the Churches of Christ, with a particular Defence of the Book of Common Prayer of the Church of England. Lond. 1671, 4to. 4. *Pater Noster*, Our Father; or, The Lord's Prayer explained, the sense thereof, and duties therein, from Scripture, History, and the Fathers, methodically cleared, and succinctly opened. Lond. 1670, 8vo. 5. *Mysterium Pietatis*; or, The Mystery of Godliness, &c. Lond. 1672, 8vo. 6. *Doxologia*; or, Glory to the Father, the Church's Hymn, reduced to glorifying the Trinity. Lond. 1672, 8vo. 7. *Dualitas*; or, A twofold subject displayed and opened, conducive to godliness and peace in order: First, *Lex loquens*, the honour and dignity of magistracy, with the duties thereupon, &c.; Secondly, *Duorum Unitas*; or, The agreement of magistracy and ministry at the election of the honourable magistrates at Edinburgh, and opening of the Diocesan Synod of the Reverend Clergy there. Edin. 1674, 4to. Dr Annand died the 13th of June 1689, and was honourably interred in the Grey-Friars church in Edinburgh.

ANNANO, a strong fort of Italy, in the duchy of Milan. It has been twice taken by the French; but was restored to the duke of Savoy in 1706. It is seated on the river Tanaro, in E. Long. 8. 30. N. Lat. 44. 40.

ANNAPOLIS, the chief town in Maryland, in North America; which as yet is but mean, because the people in this province choose to live on their plantations, as in Virginia. St Mary's was once the capital of the province of Maryland, and the town of Annapolis was known by the name of *Severn*. It received its present name in 1694, when it was made a port-town, and the residence of a collector and naval officer. W. Long. 78. 10. N. Lat. 29. 25.

ANNAPOLIS ROYAL, a town of Nova Scotia, is seated in the bay of Fundy; and, though a mean place, was formerly the capital of the province. It has one of the finest harbours in America, capable of containing 1000 vessels at anchor in the utmost security. The place is also protected by a fort and garrison. At the bottom of the harbour is a point of land, which divides two rivers; and on each side there are pleasant meadows, which in spring and autumn are covered with all sorts of fresh-water fowl. There is a trade carried on by the Indians with furs, which they exchange for European goods. W. Long. 64. 5. N. Lat. 45. 10.

ANNATES,

Annand
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Annapolis.

Annates, Annealing. ANNATES, among ecclesiastical writers, a year's income of a spiritual living.

These were, in ancient times, given to the pope through all Christendom, upon the decease of any bishop, abbot, or parish-clerk, and were paid by his successor. At the Reformation they were taken from the pope, and vested in the king; and, finally, Queen Anne restored them to the church, by appropriating them to the augmentation of poor livings.

ANNEALING, by the workmen called *nealing*, is particularly used in making glass: it consists in placing the bottles, &c. whilst hot, in a kind of oven or furnace, while they are suffered to cool gradually; they would otherwise be too brittle for use.—Metals are rendered hard and brittle by hammering: they are therefore made red-hot, in order to recover their malleability; and this is called *nealing*.

The difference between unannealed and annealed glass, with respect to brittleness, is very remarkable. When an unannealed glass-vessel is broken, it often flies into a small powder, with a violence seemingly very unproportioned to the stroke it has received. In general, it is in greater danger of breaking from a very slight stroke than from one of some considerable force. One of those vessels will often resist the effects of a pistol-bullet dropt into it from the height of two or three feet; yet a grain of sand falling into it will make it burst into small fragments. This takes place sometimes immediately on dropping the sand into it: but often the vessel will stand for several minutes after, seemingly secure; and then, without any new injury, it will fly to pieces. If the vessel be very thin, it does not break in this manner, but seems to possess all the properties of annealed glass.

The same phenomena are still more strikingly seen in glass drops or tears. They are globular at one end, and taper to a small tail at the other. They are the drops which fall from the melted mass of glass on the rods on which the bottles are made. They drop into the tubs of water which are used in the work; the greater part of them burst immediately in the water. When those that remain entire are examined, they discover all the properties of unannealed glass in the highest degree. They will bear a smart stroke on the thick end without breaking; but if the small tail be broken, they burst into small powder with a loud explosion. They appear to burst with more violence, and the powder is smaller in an exhausted receiver than in the open air. When they are annealed, they lose those properties.

Glass is one of those bodies which increase in bulk when passing from a fluid to a solid state. When it is allowed to crystallize regularly, the particles are so arranged, that it has a fibrous texture: it is elastic, and susceptible of long continued vibrations; but when a mass of melted glass is suddenly exposed to the cold, the surface crystallizes, and forms a solid shell round the interior fluid parts: this prevents them from expanding when they become solid. They, therefore, have not the opportunity of a regular crystallization; but are compressed together with little mutual cohesion: On the contrary, they press outward to occupy more space, but are prevented by the external crust. In consequence of the effort of expansion in the internal parts, the great number of glass drops burst in cool-

ing; and those which remain entire are not regularly crystallized. A smart stroke upon them communicates a vibration to the whole mass, which is nearly synchronous in every part: and therefore the effort of expansion has little more effect than if the body were at rest; but the small tail and the surface only are regularly crystallized. If the tail be broken, this communicates a vibration along the crystallized surface, without reaching the internal parts. By this they are allowed some expansion; and overcoming the cohesion of the thin outer shell, they burst it, and are dispersed in powder.

In an unannealed glass-vessel, the same thing takes place. Sometimes the vibration may continue for a considerable time before the internal parts overcome the resistance. If the vessel be very thin, the regular crystallization extends through the whole thickness; or at least the quantity of compressed matter in the middle is so inconsiderable as to be incapable of bursting the external plate.

By the process of annealing, the glass is kept for some time in a state approaching to fluidity; the heat increases the bulk of the crystallized part, and renders it so soft, that the internal parts have the opportunity of expanding and forming a regular crystallization.

A similar process is now used for rendering kettles and other vessels of cast-iron less brittle: of it the same explanation may be given. The greater number of metals diminish in bulk when they pass from a fluid to a solid state; iron, on the contrary, expands.

When cast-iron is broken, it has the appearance of being composed of grain: forged or bar iron appears to consist of plates. Forged iron has long been procured, by placing a mass of cast-iron under large hammers, and making it undergo violent and repeated compression. A process is now used for converting cast-iron into forged, by heat alone. The cast-iron is placed in an air-furnace, and kept for several hours in a degree of heat, by which it is brought near to a fluid state. It is then allowed to cool gradually, and is found to be converted into forged-iron. This process is conducted under a patent; although, if Reaumur's experiments upon cast-iron be consulted, it will appear not to be a new discovery.

By these experiments it is ascertained, that if cast-iron be exposed for any length of time to a heat considerably below its melting point, the texture and properties are not changed: but if it be kept in a heat near the melting point, the surface soon becomes lamellated like forged-iron; and the lamellated structure extends farther into the mass in proportion to the length of time in which it is exposed to that degree of heat. When it is continued for a sufficient time, and then allowed to cool gradually, it is found to possess the lamellated structure throughout.

Cast-iron, then, is brittle, because it has not had the opportunity of crystallizing regularly. When it is exposed to cold while fluid, the surface becoming solid, prevents the inner parts from expanding and arranging themselves into regular crystals. When cast-iron is brought near to the melting-point, and continued for a sufficient length of time in that degree of heat, the particles have the opportunity of arranging themselves into that form of crystals by which forged-iron is distinguished, and by which it possesses cohesion and all its properties.

There

Annealing,
Anne.

There appears, therefore, to be no other essential difference between forged and cast-iron, except what arises from the crystallization. Cast-iron is indeed often not sufficiently purified from other substances which are mixed with the calx. It appears also to contain a considerable quantity of calx unreduced; for during the process for converting it into forged-iron, by heat alone, a pale flame rises from the metal till near the end of the process. This is owing to fixed air which the heat forces off from the calx. The expulsion of this air reduces the calx, and thereby frees the metal from that injurious mixture.

That this explanation of the annealing of iron is probable, appears also from the well-known fact of forged-iron being incomparably more difficult of fusion than cast-iron. A piece of forged-iron requires a very violent heat to melt it; but when it is reduced to a small powder, it melts in a much lower degree of heat. Iron diminishes in bulk when it passes into a fluid state, while most other metals increase in volume. The expansion which heat occasions in bringing them to their melting-point, will be favourable to their fluidity, by gradually bringing the particles to the same state of separation in which they are when the mass is fluid; but the expansion of iron by heat removes it farther from that state, and keeps it in the state which is favourable to the continuance of it in a crystallized form. It will not melt till the heat expand it so much that the cohesion of crystallization be overcome. When it is reduced to a minute powder before it be exposed to the heat, it melts sooner. The crystals having been destroyed, that cohesion has no effect in preventing it from passing into a state of fluidity.

Upon the same principles may be explained the almost peculiar property of welding possessed by iron, and the conversion of forged-iron into steel.

But perhaps they may also be applied to platina, a metal which has lately gained much attention. It possesses some of the properties of iron. It is still more difficult of fusion than that metal. It is susceptible of being welded. The natural grains of it can scarcely be melted in the focus of the most powerful burning glass; but when it is dissolved in aqua regia, and precipitated by the vegetable alkali, it has been melted in small globules by the blow-pipe. When precipitated by sal ammoniac, it has been melted in a considerable mass in the heat of a furnace; but it is said to be hard and brittle.

Many attempts have been made to procure a mass of it in a malleable state, but without success. It is said that the process is now discovered by a chemist in Spain. The treatment of the metal is probably very simple. Perhaps it only consists in precipitating it in a minute powder from aqua regia, exposing it to a strong heat which melts it, and keeping it for some time in a state nearly fluid, that it may, like iron, crystallize regularly: by this it will possess all its metallic properties.

ANNE, Queen of Great Britain, daughter of James II. when duke of York, was born in 1664, and married to Prince George of Denmark in 1683, by whom she had several children, but survived them all. Upon the death of William III. March 8, 1702, she succeeded to the throne, and to a war with France, which was prosecuted under her reign by the great duke of

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Marlborough, with more glory than profit to this nation. She effected the long wished-for union between England and Scotland, which took place May 1st, 1707; and dying August 1st, 1714, was succeeded by George Lewis Augustus Elector of Hanover, as the direct descendant from James I. by his daughter Elizabeth queen of Bohemia.

St ANNE's Day, a festival of the Christian church, celebrated by the Latins on the 26th of July, but by the Greeks on the 9th of December. It is kept in honour of Anne, or Anna, mother of the Virgin Mary.

ANNECY, a city of Savoy, seated between Chambery and Geneva, on the banks of a lake of the same name, from whence runs several brooks, which flow through the town, and uniting at length form a river. There are piazzas in most of the streets of the town, which serve to shelter the inhabitants from rain. It has several collegiate and parish churches, as well as convents for men and women. The lake is about nine miles long and four broad. E. Long. 6. 12. N. Lat 45. 53.

ANNESLEY (Arthur), earl of Anglesey, and lord privy seal in the reign of King Charles II. was the son of Sir Francis Annesley, Bart. Lord Mount Norris, and Viscount Valentia, in Ireland; and was born at Dublin on the 10th of July 1614. He was for some time at the university of Oxford, and afterwards studied the law at Lincoln's Inn. He had a considerable share in the public transactions of the last century: for in the beginning of the civil war he sat in the parliament held at Oxford; but afterwards became reconciled to the opposite party, and was sent commissioner to Ulster, to oppose the designs of the rebel Owen Roe O'Neal. He engaged in several other affairs with great success. He was president of the council of state after the death of Oliver, and was principally concerned in bringing about the Restoration: soon after which, King Charles II. raised him to the dignity of a baron, by the title of Lord Annesley, of Newport Pagnel, Bucks; and a short time after, he was made earl of Anglesey. During that reign he was employed in some very important affairs, was made treasurer of the navy, and afterwards lord privy-seal. In October 1680, his lordship was charged by one Dangerfield, in an information delivered upon oath, at the bar of the house of commons, with endeavouring to stifle evidence in relation to the Popish plot, and to promote the belief of a Presbyterian one. The uneasiness he received from this attack did not prevent his speaking his opinion freely of those matters in the house of lords, particularly in regard to the Popish plot. About the same time he answered the Lord Castlehaven's Memoirs, in which that nobleman endeavoured to paint the Irish rebellion in the lightest colours; and a sharp dispute was raised, which ended in the seals being taken from him. He was a person of great abilities, had uncommon learning, and was well acquainted with the constitution and laws of England. He wrote, besides his Animadversions on Castlehaven's Memoirs, 1. The Privileges of the House of Lords and Commons stated. 2. A Discourse on the House of Lords. 3. Memoirs. 4. The History of the Troubles in Ireland, from the rebellion in 1641 till the restoration. 5. Truth unveiled, in behalf of the Church of England;—and some other works. He died in April 1686, in the 73d year of his age; and was succeeded by his son James.

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Annexa-
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ANNEXATION, in law, a term used to imply the uniting of lands or rents to the crown.

ANNIHILATION, the act of reducing any created being into nothing.

Christians, Heathens, Jews, Siamese, Persians, divines, philosophers, &c. have their peculiar systems, sentiments, conjectures, not to say dreams, concerning annihilation; and we find great disputes among them about the reality, the possibility, the means, measures, prevention, ends, &c. of annihilation.

The first notions of the production of a thing from, or reduction of it to, nothing, Dr Burnet shows, arose from the Christian theology; the words *creation* and *annihilation*, in the sense now given to them, having been equally unknown to the Hebrews, the Greeks, and the Latins.

The ancient philosophers in effect denied all annihilation as well as creation, resolving all the changes in the world into new modifications, without supposing the production of any thing new, or destruction of the old. By daily experience, they saw compounds dissolved; and that in their dissolution nothing perished but their union or connection of parts: when in death the body and soul were separated, the man they held was gone, but that the spirit remained in its original the great soul of the world, and the body in its earth from whence it came; these were again wrought by nature into new compositions, and entered new states of being which had no relation to the former.

The Persian bramins hold, that after a certain period of time, consisting of 71 joogs, God not only annihilates the whole universe, but every thing else, angels, souls, spirits, and all, by which he returns to the same state he was in before the creation; but that, having breathed a while, he goes to work again, and a new creation arises, to subsist 71 joogs more, and then to be annihilated in its turn. Thus they hold there have been almost an infinite number of worlds: but how many joogs are elapsed since the last creation, they cannot certainly tell; only in an almanac written in the Sanscript language in 1670, the world is said to be then 3,892,771 years old from the last creation.

The Siamese heaven is exactly the hell of some Socians and other Christian writers; who, shocked with the horrible prospect of eternal torments, have taken refuge in the system of annihilation. This system seems countenanced by Scripture; for that the words *death*, *destruction*, and *perishing*, whereby the punishment of the wicked is most frequently expressed in Scripture, do most properly import annihilation and an utter end of being. To this Tillotson answers, that these words, as well as those corresponding to them in other languages, are often used, both in Scripture and other writings, to signify a state of great misery and suffering, without the utter extinction of the miserable. Thus God is often said in Scripture to bring *destruction* on a nation, when he sends judgments upon them, but without exterminating or making an end of them. So, in other languages, it is frequent, by *perishing*, to express a person's being made miserable; as in that known passage in Tiberius's letter to the Roman senate: *Ita me dii, deaque omnes, pejus perdant, quam hodie perire me sentio*. As to the word *death*, a state of misery which is as bad or worse than death may properly enough be called by that name; and thus the punishment of wicked men

after the day of judgment is in the book of Revelations frequently called the *second death*.

Some Christian writers allow a long time of the most terrible torments of sinners; and after that suppose that there shall be an utter end of their being. Of this opinion Irenæus appears to have been; who, according to M. du Pin, taught that the souls, at least of the wicked, would not subsist eternally; but that, after having undergone their torments for a certain period, they would at last cease to be at all. But Tillemont, Petit, Didier, and others, endeavour to defend Irenæus from this imputation, as being too favourable to the wicked.

It has been much disputed among divines, whether, at the consummation of all things, this *earth* is to be annihilated, or only purified, and fitted for the habitation of some new order of beings. Gerard in his *Common Places*, and Hakewil in his *Apology*, contend earnestly for a total abolition or annihilation. Ray, Calmet, and others, think the system of renovation or restitution more probable, and more consonant to Scripture, reason, and antiquity. The fathers who have treated on the question are divided; some holding that the universe shall not be annihilated, but only its external face changed; others asserting, that the substance of it shall be destroyed.

How widely have the sentiments of mankind differed as to the possibility and impossibility of annihilation! According to some, nothing so difficult; it requires the infinite power of the Creator to effect it: some go further, and seem to put it out of the power of God himself. According to others, nothing so easy: Existence is a state of violence; all things are continually endeavouring to return to their primitive nothing; it requires no power at all; it will do itself; nay, what is more, it requires an infinite power to prevent it.

Many authors consider preservation as a continual reproduction of a thing, which, subsisting no longer of itself, would every moment return into nothing. Gassendi on the contrary asserts, that the world may indeed be annihilated by the same powder which first created it, but that to continue it there is no occasion for any power of preservation.

Some divines, of which number the learned Bishop King seems to be, hold annihilation for the greatest of all evils, worse than even the utmost torments of hell-flames; while others, with some of the eastern philosophers, acknowledge annihilation for the ultimate pitch of happiness human nature is capable of; that sovereign good, that absolute beatitude, so long vainly sought for by the philosophers, is found here. No wonder it had been so long concealed; for who would have thought of looking for the *summum bonum*, where others have placed the sum of misery?

The said prelate proposes it as a question, Whether suffering eternal torments be a greater evil than not existing? He thinks it highly probable, that the damned will be such fools, that feeling their own misery in the most exquisite degree, they will rather applaud their own conduct, and choose to be, and to be what they are, rather than not to be at all; fond of their condition, however wretched, like people enraged, they will persist in their former sentiments without opening their eyes to their folly, and persevere by way of indignation and revenge. Mr Bayle refutes him on this head; but might, one would think, have saved himself the trouble.

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The Talapoins hold it the supreme degree of happiness to have the soul totally annihilated, and freed from the burden and slavery of transmigrations. They speak of three Talapoins, who, after a great number of transmigrations, became gods; and when arrived at this state, procured this further reward of their merit to be annihilated. The ultimate reward of the highest perfection man can arrive at is *neurepan*, or annihilation; which at length is granted to those who are perfectly pure and good, after their souls have wandered many thousand years through various bodies.

ANNI NUBILES, in law, denotes the marriageable age of a woman, viz. after she has arrived at twelve.

ANNIVERSARY, the annual return of any remarkable day. Anniversary days, in old times, more particularly denoted those days in which an office was yearly performed for the souls of the deceased, or the martyrdom of the saints was yearly celebrated in the church.

ANNOBON, a small island of Africa, on the coast of Loango, belonging to the Portuguese. It lies in E. Long. 5. 10. S. Lat. 1. 50. and receives its name from being discovered on New-year's day. According to Pyrrard, it is about five or six French leagues in compass; but Bandrand says, it is ten leagues round. Here are two high mountains, the tops of which being continually covered with clouds, occasion frequent rains. On the south-east of the island are two rocks; one of which is low, and upon a level with the surface of the sea; the other higher and larger, but both dangerous in the night to shipping; but between them the channel is deep and clear. These rocks are inhabited by vast numbers of birds, so tame, that the sailors frequently catch them with their hands. On the same side of the island is a convenient watering-place at the foot of a rivulet, which tumbles from the mountains down to a valley covered with orange and citron trees, &c. and affording a pleasant and refreshing shade; but the road on the north-west side is difficult and dangerous, though most frequented by ships who have no intention of touching upon the continent. In either place it is difficult to take in a sufficient quantity of water, on account of the violent breakings of the sea, and a stone intrenchment erected by the negroes, from which they annoy all strangers that attempt to land. The true road for shipping lies on the north-east side, where they may anchor in seven, ten, thirteen, or sixteen fathoms, on a fine sand close to the land, opposite to the village where the negroes have thrown up their intrenchments.

The climate is wholesome, and the air clear and serene for the greatest part of the year. Every part of the island is watered by pleasant brooks, and fresh-water springs, which, however, at the new and full moons, or in all high tides, acquire a breakishness. The banks of every rivulet are covered with palms, whence the inhabitants extract their wine by incision. Here are a number of fertile valleys, which produce Turkey-corn, rice, millet, yams, potatoes, &c. and afford pasture for abundance of oxen, sheep, goats, &c. Poultry and fish also abound here; but the only mercantile production is cotton, which is esteemed equal in quality to any produced in India, though the quantity is small.

In the year 1605, the Dutch admiral Matelief

found 200 negroes, and two Portuguese, on Annobon, most of them able to bear arms, expert in the use of them, and trained up in military discipline. La Croix says, it has a town opposite to the road that contains above 100 houses, the whole surrounded by a parapet. Most of their dwellings are cane-huts. In the whole island there is not a single house built of stone, and only two of wood, which belong to the Portuguese. All the inhabitants are meanly clothed; the women go bare-headed, and have also the upper part of the body naked, modestly being defended by a piece of linen wrapt under their stomach, and falling down in the form of a petticoat, or wide apron, to the knees. As to the men, they wear only a linen girdle round the loins, with a small flap before. The women carry their children on their backs, and suckle them over the shoulder. All the inhabitants are subject to the Portuguese governor, who is the chief person in the island; at the same time that the negroes have their own chief subordinate to him. They are all rigid catholics, having either been compelled or persuaded by the arguments of the Portuguese to embrace, and, like all other converts, they are bigotted in proportion to the novelty of the belief, and their ignorance of the true tenets.

ANNO DOMINI, i. e. the year of our Lord; the computation of time from our Saviour's incarnation.

ANNOMINATION, in rhetoric, the same with what is otherwise called *paronomasia*. See PARONOMASIA.

ANNONA, in Roman antiquity, denotes provision for a year of all sorts, as of flesh, wine, &c. but especially of corn. Annona is likewise the allowance of oil, salt, bread, flesh, corn, wine, hay, and straw, which was annually provided by the contractors for the maintenance of an army.

ANNONA, the *Custard Apple*: A genus of the polygynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 52d order, *Coadunata*. The characters are: The *calyx* is a triphyllous perianthium: The *corolla* consists of six heart-shaped petals: The *stamina* have scarcely any filaments; the antheræ are numerous, sitting on the receptaculum: The *pisillum* has a roundish germen; no styli; the stigmata obtuse and numerous: The *pericarpium* is a large roundish unilocular berry, covered with a scaly bark: The *seeds* are numerous.

Species. 1. The *reticulata*, or custard-apple, is a native of the West Indies, where it grows to the height of 25 feet, and is well furnished with branches on every side: the bark is smooth, and of an ash colour; the leaves are of a light green, oblong, and have several deep transverse ribs or veins, ending in acute points; the fruit is of a conical form, as large as a tennis-ball, of an orange colour when ripe, having a soft, sweet, yellowish pulp, of the consistence of a custard, from whence it has its name. 2. The *muricata*, or four-top, rarely rises above 20 feet high, and it is not so well furnished with branches as the other; the leaves are broader, have a smooth surface without any furrows, and are of a shining green colour: the fruit is large, of an oval shape, irregular, and pointed at the top, of a greenish yellow colour, and full of small knobs on the outside; the pulp is soft, white; and of a sour and sweet taste intermixed, having many oblong, dark-coloured

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Annotation.

loured seeds. 3. The squamosa, or sweet sop, seldom rises higher than 15 feet, and well furnished with branches on every side. The leaves have an agreeable scent when rubbed; the fruit is roundish and scaly, and when ripe turns of a purple colour, and hath a sweet pulp. 4. The palustris, or water-apple, grows to the height of 30 or 40 feet. The leaves are oblong, pointed, with some slender furrows, and have a strong scent when rubbed; the fruit is seldom eaten but by negroes. The tree grows in moist places in all the West-India islands. 5. The cherimola, with oblong scaly fruit, is a native of Peru, where it is much cultivated for the fruit, and grows to be a very large tree well furnished with branches. The leaves are of a bright green colour, and much larger than those of any of the other sorts. The fruit is oblong, and scaly on the outside, of a dark purple colour when ripe, and the flesh is soft and sweet, intermixed with many brown seeds which are smooth and shining. 6. The Africana, with smooth bluish fruit. 7. The Asiatica, or purple, apple. This grows in some of the French islands, as also in Cuba, in great plenty. The trees rise to the height of 30 feet or more. The fruit is esteemed by the inhabitants of those islands, who frequently give them to sick persons. 8. The triloba, or North-American annona, called by the inhabitants *papaw*, is a native of the Bahama islands, and likewise of Virginia and Carolina. The trunks of the trees are seldom bigger than the small of a man's leg, and are about 10 or 12 feet high, having a smooth greenish-brown bark. In March, when the leaves begin to sprout, the blossoms appear, consisting of six greenish-white petals. The fruit grows in clusters of three, and sometimes of four together: when ripe, they are yellow, covered with a thin smooth skin, which contains a yellow pulp of a sweet luscious taste. In the middle of this pulp, lie in two rows twelve seeds, divided by as many thin membranes. All parts of the tree have a rank, if not a fetid, smell; nor is the fruit relished by many except negroes. These trees grow in low shady swamps, and in a very fat soil.

Culture. The last sort will thrive in the open air in Britain, if it is placed in a warm and sheltered situation; but the plants should be trained up in pots, and sheltered in winter for two or three years till they have acquired strength. The seeds frequently remain a whole year in the ground; and therefore the earth in the pots ought not to be disturbed, though the plants do not come up the first year. If the pots where those plants are sown are plunged into a new hot-bed, they will come up much sooner than those that are exposed to the open air. All the other sorts require to be kept in a warm stove, or they will not live in this country.

ANNONÆ PREFECTUS, in antiquity, an extraordinary magistrate, whose business it was to prevent a scarcity of provision, and to regulate the weight and fineness of bread.

ANNONAY, a small town of France, in the Upper Vivarais, seated on the river Deunre. E. Long. 4. 52. N. Lat. 45. 15.

ANNOT, a small city in the mountains of Provence in France. E. Long. 7. 0. N. Lat. 44. 4.

ANNOTATION, in matters of literature, a brief commentary, or remark, upon a book or writing, in or-

der to clear up some passage, or draw some conclusion from it.

ANNOTTA. See ANOTTA.

ANNUAL, in a general sense, an appellation given to whatever returns every year, or is always performed within that space of time.

ANNUAL Motion of the Earth. See ASTRONOMY.

ANNUAL Leaves, are such leaves as come up afresh in the spring, and perish in winter. These stand opposed to *Ever-greens*.

ANNUAL Plants, called also simply *annuals*, are such as only live their year, *i. e.* come up in the spring and die again in the autumn; and accordingly are to be recruited every year.

ANNUALRENT is used, in Scots law, to denote an yearly profit due by a debtor in a sum of money to a creditor for the use of it.

Right of ANNUALRENT, in Scots law, the original method of burdening lands with an yearly payment for the loan of money, before the taking of interest for money was allowed by statute.

ANNUEL OF NORWAY, of which mention is made in the acts of parliament of king James III. was an annual payment of an hundred marks Sterling, which the kings of Scotland were obliged to pay to the kings of Norway, in satisfaction for some pretensions which the latter had to the Scottish kingdom, by virtue of a conveyance made thereof by Malcolm Kenmore, who usurped the crown after his brother's decease. This annuel was first established in 1266; in consideration whereof the Norwegians renounced all title to the succession to the isles of Scotland. It was paid till the year 1468, when the annuel, with all its arrears, was renounced in the contract of marriage between king James III. and Margaret daughter of Christian I. king of Norway, Denmark, and Sweden.

ANNUITY, a sum of money, payable yearly, half yearly, or quarterly, to continue a certain number of years, for ever, or for life.

An annuity is said to be an arrear, when it continues unpaid after it falls due. And an annuity is said to be in reversion, when the purchaser, upon paying the price, does not immediately enter upon possession; the annuity not commencing till some time after.

Interest on annuities may be computed either in the way of simple or compound interest. But compound interest, being found most equitable, both for buyer and seller, the computation by simple interest is universally disused.

I. *Annuities for a certain time.*

PROBLEM I. Annuity, rate, and time, given, to find the amount, or sum of yearly payments, and interest.

RULE. Make 1 the first term of a geometrical series, and the amount of 1 l. for a year the common ratio; continue this series to as many terms as there are years in the question; and the sum of this series is the amount of 1 l. annuity for the given years; which, multiplied by the given annuity, will produce the amount sought.

EXAMPLE. An annuity of 40 l. payable yearly, is forborn and unpaid till the end of 5 years: What will then be due, reckoning compound interest at 5 per cent. on all the payments then in arrear?

1 : 1.05

Annota
||
Annuity.

Annuity.

1 : 1.05 : 1.1025 : 1.157625 : 1.21550625 : whose sum is 5.52563125 l.; and $5.25563125 \times 40 = 221.02525 = 221$ l. 0s. 6d. the amount sought.

The amount may also be found thus : Multiply the given annuity by the amount of 1 l. for a year ; to the product add the given annuity, and the sum is the amount in two years ; which multiply by the amount of 1 l. for a year ; to the product add the given annuity, and the sum is the amount in 3 years, &c. The former question wrought in this manner follows.

40 am. in 1 year.	126.1 am. in 3 years.
1.05	1.05
42.00	132.405
40	40
82 am. in 2 years.	172.405 am. in 4 years.
1.05	1.05
86.10	181.02525
40	40

126.1 am. in 3 years. 221.02525 am. in 5 years.

If the given time be years and quarters, find the amount for the whole years, as above ; then find the amount of 1 l. for the given quarters ; by which multiply the amount for the whole years ; and to the product add such a part of the annuity as the given quarters are of a year.

If the given annuity be payable half yearly, or quarterly, find the amount of 1 l. for half a year or a quarter ; by which find the amount for the several half-years or quarters, in the same manner as the amount for the several years is found above.

PROB. 2. Annuity, rate, and time given, to find the present worth, or sum of money that will purchase the annuity.

RULE. Find the amount of the given annuity by the former problem ; and then, by compound interest, find the present worth of this amount, as a sum due at the end of the given time.

EXAMP. What is the present worth of an annuity of 40 l. to continue 5 years, discounting at 5 per cent. compound interest ?

By the former problem, the amount of the given annuity for 5 years, at 5 per cent. is 221.02525 ; and by compound interest, the amount of 1 l. for 5 years, at 5 per cent. is 1.2762815625.

And, $1.2762815625 \times 221.02525000 (173.179 = 173$ l. 3s. 7d. the present worth sought.

The present worth may be also found thus : By compound interest, find the present worth of each year by itself, and the sum of these is the present worth sought. The former example done in this way follows.

1.2762815625	40.000000000	(31.3410
1.21550625	40.00000000	(32.9080
1.157625	40.000000	(34.5535
1.1025	40.0000	(36.2811
1.05	40.0	(38.0952

Present worth, 173.1788

If the annuity to be purchased be in reversion, find first the present worth of the annuity, as commencing

immediately, by any of the methods taught above ; and then, by compound interest, find the present worth of that present worth, rebating for the time in reversion ; and this last present worth is the answer.

EXAMP. What is the present worth of a yearly pension or rent of 75 l. to continue 4 years, but not to commence till 3 years hence, discounting at 5 per cent. ?

$$\begin{aligned} .05 : 1 :: 75 : 1500 \\ 1.05 \times 1.05 \times 1.05 \times 1.05 = 1.21550625 \\ 1.21550625 \times 1500.00000 (1234.05371 \\ 1500 \\ 1234.05371 \end{aligned}$$

265.94629, present worth of the annuity, if it was to commence immediately.

$$\begin{aligned} 1.05 \times 1.05 \times 1.05 = 1.157625 \quad L. \quad s. \quad d. \\ 1.157625 \times 265.94629 (229.7344 = 229 \quad 14 \quad 8\frac{1}{2} \end{aligned}$$

PROB. 3. Present worth, rate and time given, to find the annuity.

RULE. By the preceding problem, find the present worth of 1 l. annuity for the rate and time given ; and then say, As the present worth thus found to 1 l. annuity, so the present worth given to its annuity ; that is, divide the given present worth by that of 1 l. annuity.

EXAMP. What annuity, to continue 5 years, will 173 l. 3s. 7d. purchase, allowing compound interest at 5 per cent. ?

$$\begin{aligned} .05 : 1 :: 1 : 201. \\ 1.05 \times 1.05 \times 1.05 \times 1.05 \times 1.05 = 1.2762815625 \\ 1.2762815625 \times 20.00000000 (15.6705. \\ 20 \\ 15.6705 \end{aligned}$$

4.3295 present worth of 1 l. annuity.

4.329)173.179(40 l. annuity. *Ans.*

II. Annuities for ever, or freehold Estates.

In freehold estates, commonly called *annuities in fee-simple*, the things chiefly to be considered are, 1. The annuity or yearly rent. 2. The price or present worth. 3. The rate of interest. The questions that usually occur on this head will fall under one or other of the following problems.

PROB. 1. Annuity and rate of interest given, to find the price.

As the rate of 1 l. to 1 l. so the rent to the price.

EXAMP. The yearly rent of a small estate is 40 l. : What is it worth in ready money, computing interest at $3\frac{1}{2}$ per cent. ?

$$\text{As } .035 : 1 :: 40 : 1142.857142 = L. 1142 \quad 17 \quad 1\frac{1}{2}$$

PROB. 2. Price and rate of interest given, to find the rent or annuity.

As 1 l. to its rate, so the price to the rent.

EXAMP. A gentleman purchases an estate for 4000 l. and has $4\frac{1}{2}$ per cent. for his money : Required the rent ?

$$\text{As } 1 : .045 :: 4000 : 1 : 180 \text{ l. rent sought.}$$

PROB. 3. Price and rent given, to find the rate of interest.

As the price to the rent, so 1 to the rate.

EXAMP. An estate of 180 l. yearly rent is bought for 4000 l. : What rate of interest has the purchaser for his money ?

$$\text{As } 4000 : 180 :: 1 : .045 \text{ rate sought.}$$

L

PROB.

Annuit. PROB. 4. The rate of interest given, to find how many years purchase an estate is worth.

Divide 1 by the rate, and the quot is the number of years purchase the estate is worth.

EXAMP. A gentleman is willing to purchase an estate, provided he can have $2\frac{1}{2}$ per cent. for his money: How many years purchase may he offer?

.025) 1.000 (40 years purchase. *Ans.*

PROB. 5. The number of years purchase, at which an estate is bought or sold, given, to find the rate of interest.

Divide 1 by the number of years purchase, and the quot is the rate of interest.

EXAMP. A gentleman gives 40 years purchase for an estate: What interest has he for his money?

40) 1.000 (.025 rate sought.

The computations hitherto are all performed by a single division or multiplication, and it will scarcely be perceived that the operations are conducted by the rules of compound interest; but when a reversion occurs, recourse must be had to tables of annuities on compound interest.

PROB. 6. The rate of interest, and the rent of a freehold estate in reversion, given, to find the present worth or value of the reversion.

By Prob. 1. find the price or present worth of the estate, as if possession was to commence presently; and then, by the Tables, find the present value of the given annuity, or rent, for the years prior to the commencement; subtract this value from the former value, and the remainder is the value of the reversion.

EXAMP. A has the possession of an estate of 130 l. per annum, to continue 20 years; B has the reversion of the same estate from that time for ever: What is the value of the estate, what the value of the 20 years possession, and what the value of the reversion, reckoning compound interest at 6 per cent.?

By Prob. 1. .06) 130.00 (2166.6666 value of the estate.

By Tables 1491.0896 val. of the possession.

675.5770 val. of the reversion.

PROB. 7. The price or value of a reversion, the time prior to the commencement, and rate of interest, given, to find the annuity or rent.

By the Tables, find the amount of the price of the reversion for the years prior to the commencement; and then by Prob. 3. find the annuity which that amount will purchase.

EXAMP. The reversion of a freehold estate, to commence 20 years hence, is bought for 675.577 l. compound interest being allowed at 6 per cent.: Required the annuity or rent?

By the Tables the amount of 675.577 l. } L.
for 20 years, at 6 per cent. is } 2166.6
By Prob. 2. $2166.6 \times .06 = 130.0$ rent sought.

III. Life Annuities.

THE value of annuities for life is determined from observations made on the bills of mortality. Dr Halley, Mr Simpson, and Monf. de Moivre, are gentlemen of distinguished merit in calculations of this kind.

Annuit. Dr Halley had recourse to the bills of mortality at Breslaw, the capital of Silesia, as a proper standard for the other parts of Europe, being a place pretty central, at a distance from the sea, and not much crowded with traffickers or foreigners. He pitches upon 1000 persons all born in one year, and observes how many of these were alive every year, from their birth to the extinction of the last, and consequently how many died each year, as in the first of the following tables; which is well adapted to Europe in general. But in the city of London, there is observed to be a greater disparity in the births and burials than in any other place, owing probably to the vast resort of people thither, in the way of commerce, from all parts of the known world. Mr Simpson, therefore, in order to have a table particularly suited to this populous city, pitches upon 1280 persons all born in the same year, and records the number remaining alive each year till none were in life.

It may not be improper, however, to observe, that however perfect tables of this sort may be in themselves, and however well adapted to any particular climate, yet the conclusions deduced from them must always be uncertain, being nothing more than probabilities, or conjectures drawn from the usual period of human life. And the practice of buying and selling annuities on lives, by rules founded on such principles, may be justly considered as a sort of lottery or chance-work, in which the parties concerned must often be deceived. But as estimates and computations of this kind are now become fashionable, we shall subjoin some brief account of such as appear most material.

Dr Halley's Table on the bills of mortality at Breslaw.

Age.	Perf. liv.	A.	Perf. liv.	A.	Perf. liv.	A.	Perf. liv.
1	1000	24	573	47	377	70	142
2	855	25	567	48	367	71	131
3	798	26	560	49	357	72	120
4	760	27	553	50	346	73	109
5	732	28	546	51	335	74	98
6	710	29	539	52	324	75	88
7	692	30	531	53	313	76	78
8	680	31	523	54	302	77	68
9	670	32	515	55	292	78	58
10	661	33	507	56	282	79	49
11	653	34	499	57	272	80	41
12	646	35	490	58	262	81	34
13	640	36	481	59	252	82	28
14	634	37	472	60	242	83	23
15	628	38	463	61	232	84	20
16	622	39	454	62	222	85	15
17	616	40	445	63	212	86	11
18	610	41	436	64	202	87	8
19	604	42	427	65	192	88	5
20	598	43	417	66	182	89	3
21	592	44	407	67	172	90	1
22	586	45	397	68	162	91	0
23	579	46	387	69	152		

Annuity.

Mr Simpson's Table on the bills of mortality at London.

Age.	Perf. liv.	A.	Perf. liv.	A.	Perf. liv.	A.	Perf. liv.
0	1280	24	434	48	220	72	59
1	870	25	426	49	212	73	54
2	700	26	418	50	204	74	49
3	635	27	410	51	196	75	45
4	600	28	402	52	188	76	41
5	580	29	394	53	180	77	38
6	564	30	385	54	172	78	35
7	551	31	376	55	165	79	32
8	541	32	367	56	158	80	29
9	532	33	358	57	151	81	26
10	524	34	349	58	144	82	23
11	517	35	340	59	137	83	20
12	510	36	331	60	130	84	17
13	504	37	322	61	123	85	14
14	498	38	313	62	117	86	12
15	492	39	304	63	111	87	10
16	486	40	294	64	105	88	8
17	480	41	284	65	99	89	6
18	474	42	274	66	93	90	5
19	468	43	264	67	87	91	4
20	462	44	255	68	81	92	3
21	455	45	246	69	75	93	2
22	448	46	237	70	69	94	1
23	441	47	228	71	64	95	0

From the preceding tables the probability of the continuance or extinction of human life is estimate as follows.

1. The probability that a person of a given age shall live a certain number of years, is measured by the proportion which the number of persons living at the proposed age has to the difference between the said number and the number of persons living at the given age.

Thus, if it be demanded, what chance a person of 40 years has to live seven years longer? from 445, the number of persons living at 40 years of age in Dr Halley's table, subtract 377, the number of persons living at 47 years of age, and the remainder 68, is the number of persons that died during these 7 years; and the probability or chance that the person in the question shall live these 7 years is as 377 to 68, or nearly as $5\frac{1}{2}$ to 1. But, by Mr Simpson's table, the chance is something less than that of 4 to 1.

2. If the year to which a person of a given age has an equal chance of arriving before he dies, be required, it may be found thus: Find half the number of persons living at the given age in the tables, and in the column of age you have the year required.

Thus, if the question be put with respect to a person of 30 years of age, the number of that age in Dr Halley's table is 531, the half whereof is 265, which is found in the table between 57 and 58 years; so that a person of 30 years has an equal chance of living between 27 and 28 years longer.

3. By the tables, the premium of insurance upon lives may in some measure be regulated.

Thus, the chance that a person of 25 years has to live another year, is, by Dr Halley's table, as 80 to 1; but the chance that a person of 50 years has to live a year longer is only 30 to 1; and, consequently, the premium for insuring the former ought to be the premium for insuring the latter for one year, as 30 to 80, or as 3 to 8.

PROB. I. To find the value of an annuity of 1l. for the life of a single person of any given age.

Monf. de Moivre, by observing the decrease of the probabilities of life, as exhibited in the table, composed an algebraic theorem or canon, for computing the value of an annuity for life; which canon we here lay down by the way of

RULE. Find the complement of life; and, by the tables, find the value of 1l. annuity for the years denoted by the said complement; multiply this value by the amount of 1l. for a year, and divide the product by the complement of life; then subtract the quot from 1; divide the remainder by the interest of 1l. for a year; and this last quot will be the value of the annuity sought, or, in other words, the number of years purchase the annuity is worth.

EXAMP. What is the value of an annuity of 1l. for an age of 50 years, interest at 5 per cent.?

86

50 age given.

36 complement of life.

By the tables, the value is, 16.5468

Amount of 1l. for a year. 1.05

827340

165468

Complement of life, 36) 17.374140(.482615

From unity, viz. 1.000000

Subtract .482615

Interest of 1l. .05).517385(10.3477 value sought.

By the preceding problem is constructed the following table.

The

Annuity.

The value of 1 l. annuity for a single life.

The value of 1 l annuity for a single life.

Annuity.

Age.	3 per c.	3½ per c.	4 per c.	4½ per c.	5 per c.	6 per c.
9=10	19.87	18.27	16.88	15.67	14.60	12.80
8=11	19.74	18.16	16.79	15.59	14.53	12.75
7=12	19.60	18.05	16.64	15.51	14.47	12.70
13	19.47	17.94	16.60	15.43	14.41	12.65
6=14	19.33	17.82	16.50	15.35	14.34	12.60
15	19.19	17.71	16.41	15.27	14.27	12.55
16	19.05	17.59	16.31	15.19	14.20	12.50
5=17	18.90	17.46	16.21	15.10	14.12	12.45
18	18.76	17.33	16.10	15.01	14.05	12.40
19	18.61	17.21	15.99	14.92	13.97	12.35
4=20	18.46	17.09	15.89	14.83	13.89	12.30
21	18.30	16.96	15.78	14.73	13.81	12.20
22	18.15	16.83	15.67	14.64	13.72	12.15
23	17.99	16.69	15.55	14.54	13.64	12.10
3=24	17.83	16.56	15.43	14.44	13.55	12.00
25	17.66	16.42	15.31	14.34	13.46	11.95
26	17.50	16.28	15.19	14.23	13.37	11.90
27	17.33	16.13	15.04	14.12	13.28	11.80
28	17.16	15.98	14.94	14.02	13.18	11.75
29	16.98	15.83	14.81	13.90	13.09	11.65
30	16.80	15.68	14.68	13.79	12.99	11.60
2=31	16.62	15.53	14.54	13.67	12.88	11.50
32	16.44	15.37	14.41	13.55	12.78	11.40
33	16.25	15.21	14.27	13.43	12.67	11.35
34	16.06	15.05	14.12	13.30	12.56	11.25
35	15.86	14.89	13.98	13.17	12.45	11.15
36	15.67	14.71	13.82	13.04	12.33	11.05
37	15.46	14.52	13.67	12.90	12.21	11.00
38	15.29	14.34	13.52	12.77	12.09	10.90
1=39	15.05	14.16	13.36	12.63	11.96	10.80
40	14.84	13.98	13.20	12.48	11.83	10.70
41	14.63	13.79	13.02	12.33	11.70	10.55
42	14.41	13.59	12.85	12.18	11.57	10.45
43	14.19	13.40	12.68	12.02	11.43	10.35
44	13.96	13.20	12.50	11.87	11.29	10.25
45	13.73	12.99	12.32	11.70	11.14	10.10
46	13.49	12.78	12.13	11.54	10.99	10.00
47	13.25	12.56	11.94	11.37	10.84	9.85
48	13.01	12.36	11.74	11.19	10.68	9.75
49	12.76	12.14	11.54	11.00	10.51	9.60
50	12.51	11.92	11.34	10.82	10.35	9.45
51	12.26	11.69	11.13	10.64	10.17	9.30
52	12.00	11.45	10.92	10.44	9.99	9.20
53	11.73	11.20	10.70	10.24	9.82	9.00
54	11.46	10.95	10.47	10.04	9.63	8.85
55	11.18	10.69	10.24	9.82	9.44	8.70
56	10.90	10.44	10.01	9.61	9.24	8.55
57	10.61	10.18	9.77	9.39	9.04	8.35
58	10.32	9.91	9.52	9.16	8.83	8.20
59	10.03	9.64	9.27	8.93	8.61	8.00
60	9.73	9.36	9.01	8.69	8.39	7.80

Age.	3 per c.	3½ per c.	4 per c.	4½ per c.	5 per c.	6 per c.
61	9.42	9.08	8.75	8.44	8.16	7.60
62	9.11	8.79	8.48	8.19	7.93	7.40
63	8.79	8.49	8.20	7.94	7.68	7.20
64	8.46	8.19	7.92	7.67	7.43	6.95
65	8.13	7.88	7.63	7.39	7.18	6.75
66	7.79	7.56	7.33	7.12	6.91	6.50
67	7.45	7.24	7.02	6.83	6.64	6.25
68	7.10	6.91	6.75	6.54	6.36	6.00
69	6.75	6.57	6.39	6.23	6.07	5.75
70	6.38	6.22	6.06	5.92	5.77	5.50
71	6.01	5.87	5.72	5.59	5.47	5.20
72	5.63	5.51	5.38	5.26	5.15	4.90
73	5.25	5.14	5.02	4.92	4.82	4.60
74	4.85	4.77	4.66	4.57	4.49	4.30
75	4.45	4.38	4.29	4.22	4.14	4.00
76	4.05	3.98	3.91	3.84	3.70	3.65
77	3.63	3.57	3.52	3.47	3.41	3.30
78	3.21	3.16	3.11	3.07	3.03	2.95
79	2.78	2.74	2.70	2.67	2.64	2.55
80	2.34	2.31	2.28	2.26	2.23	2.15

The above table shows the value of an annuity of one pound for a single life, at all the current rates of interest; and is esteemed the best table of this kind extant, and preferable to any other of a different construction. But yet those who sell annuities have generally one and a half or two years more value, than specified in the table, from purchasers whose age is 20 years or upwards.

Annuities of this sort are commonly bought or sold at so many years purchase; and the value assigned in the table may be so reckoned. Thus the value of an annuity of one pound for an age of 50 years, at 3 per cent. interest, is 12.51; that is, 12 l. 10 s. or twelve and a half years purchase. The marginal figures on the left of the column of age serve to shorten the table, and signify, that the value of an annuity for the age denoted by them is the same with the value of an annuity for the age denoted by the numbers before which they stand. Thus the value of an annuity for the age of 9 and 10 years is the same; and the value of an annuity for the age of 6 and 14, for the age of 3 and 24, &c. is the same. The further use of the table will appear in the questions and problems following.

QUEST. 1. A person of 50 years would purchase an annuity for life of 200 l.: What ready money ought he to pay, reckoning interest at 4½ per cent.?

L.

By the table the value of 1 l. is 10.8

Multiply by 200

Value to be paid in ready money, 2164.00 Ans.

QUEST. 2. A young merchant marries a widow lady of 40 years of age, with a jointure of 300 l. a year, and wants to dispose of the jointure for ready money: What sum ought he to receive, reckoning interest at 3½ per cent.?

By

Annuity.

By the table the value of 1l. is 13.98
300

Value to be received in ready money, 4194.00 *Ans.*

PROB. 2. To find the value of an annuity for the joint continuance of two lives, one life failing, the annuity to cease.

Here there are two cases, according as the ages of the two persons are equal or unequal.

1. If the two persons be of the same age, work by the following

RULE. Take the value of any one of the lives from the table; multiply this value by the interest of 1l. for a year; subtract the product from 2; divide the foresaid value by the remainder; and the quot will be the value of 1l. annuity, or the number of years purchase sought.

EXAMP. What is the value of 100l. annuity for the joint lives of two persons, of the age of 30 years each, reckoning interest at 4 per cent.?

By the table, one life of 30 years is	-	14.68
Multiply by	-	.04
Subtract the product	-	5872
From	-	2.0000
Remains	-	1.4128

And 1.4128)14.68(10.39 value of 1l. annuity.

And 10.39X100=1039 the value sought.

2. If the two persons are of different ages, work as directed in the following

RULE. Take the values of the two lives from the table; multiply them into one another, calling the result the first product; then multiply the said first product by the interest of 1l. for a year, calling the result the second product; add the values of the two lives, and from their sum subtract the second product; divide the first product by the remainder, and the quot will be the value of 1l. annuity, or the number of years purchase sought.

EXAMP. What is the value of 70l. annuity for the joint lives of two persons, whereof one is 40 and the other 50 years of age, reckoning interest at 5 per cent.?

By the table, the value of 40 years is	-	11.83
And the value of 50 years is	-	10.35

First product,	122.4405
Multiply by	- .05

Second product,	6.122025
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Sum of the two lives,	-	22.180000
Second product deduct,	-	6.122025

Remainder,	-	16.057975
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And 16.057975)122.4405(7.62 value of 1l. annuity.

533.40 value sought.

PROB. 3. To find the value of an annuity upon the longest of two lives; that is, to continue so long as either of the persons is in life.

RULE. From the sum of the values of the single lives subtract the value of the joint lives, and the remainder will be the value sought.

EXAMP. What is the value of an annuity of 1l. up-
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on the longest of two lives, the one person being 30, and the other 40 years of age, interest at 4 per cent.?

By the table, 30 years is	-	14.68
40 years is	-	13.20

Value of their joint lives, by Prob. 2.	}	27.88
Case 2. is	-	9.62

Value sought,	-	18.26
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If the annuity be any other than 1l. multiply the answer found as above by the given annuity.

If the two persons be of equal age, find the value of their joint lives by Case 1. of Prob. 2.

PROB. 4. To find the value of the next presentation to a living.

RULE. From the value of the successor's life subtract the joint value of his and the incumbent's life, and the remainder will be the value of 1l. annuity; which multiplied by the yearly income, will give the sum to be paid for the next presentation.

EXAMP. A enjoys a living of 100l. per annum, and B would purchase the said living for his life after A's death: The question is, What he ought to pay for it, reckoning interest at 5 per cent. A being 60, and B 25 years of age?

By the table, B's life is	-	13.46
Joint value of both lives, by Prob. 2. is	-	6.97

The value of 1l. annuity,	-	6.49
Multiply by	-	100

Value of next presentation,	-	649.00
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The value of a direct presentation is the same as that of any other annuity for life, and is found for 1l. by the table; which being multiplied by the yearly income, gives the value sought.

PROB. 5. To find the value of a reversion for ever, after two successive lives; or to find the value of a living after the death of the present incumbent and his successor.

RULE. By Prob. 3. find the value of the longest of the two lives, and subtract that value from the value of the perpetuity, and the remainder will be the value sought.

EXAMP. A, aged 50, enjoys an estate or living of 100l. per annum; B, aged 30, is intitled to his lifetime of the same estate after A's death; and it is proposed to sell the estate just now, with the burden of A and B's lives on it: What is the reversion worth, reckoning interest at 4 per cent.?

By the table, A's life of 50 is	-	11.34
B's life of 30 is	-	14.68

Sum,	26.02
------	-------

Value of their joint lives, found by	}	8.60
Prob. 2. Case 2. is	-	

Value of the longest life,	-	17.42 sub.
From the value of the perpetuity,	-	25.00

Remains the value of 1l. reversion,	-	7.58
Multiply by	-	100

Value of the reversion,	-	758.00
G	-	PROB.

Annuity.

PROB. 6. To find the value of the joint continuance of three lives, one life failing, the annuity to cease.

RULE. Find the single values of the three lives from the table; multiply these single values continually, calling the result the product of the three lives; multiply that product by the interest of 11. and that product again by 2, calling the result the double product; then, from the sum of the several products of the lives, taken two and two, subtract the double product; divide the product of the three lives by the remainder, and the quot will be the value of the three joint lives.

EXAMP. A is 18 years of age, B 34, and C 56; What is the value of their joint lives, reckoning interest at 4 per cent.?

By the table, the value of A's life is 16.1, of B's 14.12, and of C's 10.01.

$16.1 \times 14.12 \times 10.01 = 2275.6$, product of the three lives.

	.04
91.024	
2	
182.048	double product.
Product of A and B, 16.1 $\times$ 14.12	227.33
A and C, 16.1 $\times$ 10.01	161.16
B and C, 14.12 $\times$ 10.00	141.34
Sum of all, two and two,	529.83
Double product subtract,	182.048
Remainder,	347.782

And $347.782 \div 2275.600 = 6.54$ value sought.

PROB. 7. To find the value of an annuity upon the longest of three lives.

RULE. From the sum of the values of the three single lives taken from the table, subtract the sum of all the joint lives, taken two and two, as found by Prob. 2. and to the remainder add the value of the three joint lives, as found by Prob. 6. and that sum will be the value of the longest life sought.

EXAMP. A is 18 years of age, B 34, and C 56: What is the value of the longest of these three lives, interest at 4 per cent.?

By the table, the single value of A's life is	16.1
single value of B's life is	14.12
single value of C's life is	10.01
Sum of the single values,	40.23

By Prob. 2. the joint value of A and B is	10.76
joint value of A and C is	8.19
joint value of B and C is	7.65

Sum of the joint lives, 26.60

Remainder, 13.63

By Prob. 6. the value of the 3 joint lives is 6.54

Value of the longest of the 3 lives, 20.17

Other problems might be added, but these adduced are sufficient for most purposes. The reader probably may wish that the reason of the rules, which, it must be owned, are intricate, had been assigned; but this could not be done without entering deeper into the subject than was practicable in this place. See CHANCES.

ANNUITIES (*Borrowing upon*); one of the methods employed by government for raising supplies.

Of this there are two methods; that of borrowing upon annuities for terms of years, and that of borrowing upon annuities for lives.

During the reigns of king William and queen Anne, large sums were frequently borrowed upon annuities for terms of years, which were sometimes longer and sometimes shorter. In 1683, an act was passed for borrowing one million upon an annuity of 14 per cent. or of 140,000 l. a year for 16 years. In 1691, an act was passed for borrowing a million upon annuities for lives, upon terms which in the present times would appear very advantageous. But the subscription was not filled up. In the following year the deficiency was made good by borrowing upon annuities for lives at 14 per cent. or at little more than seven years purchase. In 1695, the persons who had purchased those annuities were allowed to exchange them for others of 96 years, upon paying into the exchequer 63 pounds in the hundred; that is, the difference between 14 per cent. for life, and 14 per cent. for 96 years, was sold for 63 pounds, or for four and a half years purchase. Such was the supposed instability of government, that even these terms procured few purchasers. In the reign of queen Anne, money was upon different occasions borrowed both upon annuities for lives and upon annuities for terms of 32, of 89, of 98, and of 99 years. In 1719, the proprietors of the annuities for 32 years were induced to accept in lieu of them South Sea stock to the amount of eleven and a half years purchase of the annuities, together with an additional quantity of stock equal to the arrears which happened then to be due upon them. In 1720, the greater part of the other annuities for terms of years both long and short were subscribed into the same fund. The long annuities at that time amounted to 666,821 l. 8 s. 3 1/2 d. a year. On the 5th of January, 1775, the remainder of them, of what was not subscribed at that time, amounted only to 136,453 l. 12 s. 8 d.

During the two wars which begun in 1739 and in 1755, little money was borrowed either upon annuities for terms of years, or upon those for lives. An annuity for 98 or 99 years, however, is worth nearly as much money as a perpetuity, and should, therefore, one might think, be a fund for borrowing nearly as much. But those who, in order to make family-settlements, and to provide for remote futurity, buy into the public stocks, would not care to purchase into one of which the value was continually diminishing; and such people make a very considerable proportion both of the proprietors and purchasers of stock. An annuity for a long term of years, therefore, though its intrinsic value may be very nearly the same with that of a perpetual annuity, will not find nearly the same number of purchasers. The subscribers to a new loan, who mean generally to sell their subscription as soon as possible, prefer greatly a perpetual annuity redeemable by parliament, to an irredeemable annuity for a long term of years of only equal amount. The value of the former may be supposed always the same, or very nearly the same; and it makes, therefore, a more convenient transferable stock than the latter.

During the two last-mentioned wars, annuities, either for terms of years or for lives, were seldom granted but

Annuity.

Annuity. as premiums to the subscribers to a new loan, over and above the redeemable annuity or interest upon the credit of which the loan was supposed to be made. They were granted, not as the proper fund upon which the money was borrowed; but as an additional encouragement to the lender.

Annuities for lives have occasionally been granted in two different ways; either upon separate lives, or upon lots of lives, which in French are called *Tontines*, from the name of their inventor. When annuities are granted upon separate lives, the death of every individual annuitant disburthens the public revenue so far as it was effected by his annuity. When annuities are granted upon tontines, the liberation of the public revenue does not commence till the death of all the annuitants comprehended in one lot, which may sometimes consist of twenty or thirty persons, of whom the survivors succeed to the annuities of all those who die before them; the last survivor succeeding to the annuities of the whole lot. Upon the same revenue more money can always be raised by tontines than by annuities for separate lives. An annuity, with a right of survivorship, is really worth more than an equal annuity for a separate life; and from the confidence which every man naturally has in his own good fortune, the principle upon which is founded the success of all lotteries, such an annuity generally sells for something more than it is worth. In countries where it is usual for government to raise money by granting annuities, tontines are upon this account generally preferred to annuities for separate lives. The expedient which will raise most money, is almost always preferred to that which is likely to bring about in the speediest manner the liberation of the public revenue.

In France a much greater proportion of the public debts consists in annuities for lives than in England. According to a memoir presented by the parliament of Bourdeaux to the king in 1764, the whole public debt of France is estimated at twenty-four hundred millions of livres; of which the capital, for which annuities for lives had been granted, is supposed to amount to three hundred millions, the eighth-part of the whole public debt. The annuities themselves are computed to amount to thirty millions a-year, the fourth part of one hundred and twenty millions, the supposed interest of that whole debt. It is not the different degrees of anxiety in the two governments of France and England for the liberation of the public revenue, which occasions this difference in their respective modes of borrowing; it arises altogether from the different views and interests of the lenders.

In Britain, the seat of government being in the greatest mercantile city in the world, the merchants are generally the people who advance money to government. By advancing it they do not mean to diminish, but, on the contrary, to increase their mercantile capitals; and unless they expected to sell with some profit their share in the subscription for a new loan, they never would subscribe. But if by advancing their money they were to purchase, instead of perpetual annuities, annuities for lives only, whether their own or those of other people, they would not always be so likely to sell them with a profit. Annuities upon their own lives they would always sell with loss; because no man will give for an annuity upon the

life of another whose age and state are nearly the same with his own, the same price which he would give for one upon his own. An annuity upon the life of a third person, indeed, is, no doubt, of equal value to the buyer and the seller; but its real value begins to diminish from the moment it is granted, and continues to do so more and more as long as it subsists. It can never, therefore, make so convenient a transferable stock as a perpetual annuity, of which the real value may be supposed always the same, or very nearly the same.

In France, the seat of government not being in a great mercantile city, merchants do not make so great a proportion of the people who advance money to government. The people concerned in the finances, the farmers-general, the receivers of the taxes which are not in farm, the court-bankers, &c. make the greater part of those who advance their money in all public exigencies. Such people are commonly men of mean birth, but of great wealth, and frequently of great pride. They are too proud to marry their equals, and women of quality disdain to marry them. They frequently resolve, therefore, to live bachelors; and having neither any families of their own, nor much regard for those of their relations, whom they are not always very fond of acknowledging, they desire only to live in splendor during their own time, and are not unwilling that their fortune should end with themselves. The number of rich people, besides, who are either averse to marry, or whose condition of life renders it either improper or inconvenient for them to do so, is much greater in France than in England. To such people, who have little or no care for posterity, nothing can be more convenient than to exchange their capital for a revenue, which is to last just as long, and no longer, than they wish it to do.

ANNUITY OF TEINDS, in Scots law, a certain proportion of the teinds of erected benefices formerly payable to the crown, but now gone into disuse.

ANNULAR, in a general sense, something in the form of, or resembling, a ring. It is also a peculiar denomination of the fourth finger, commonly called the *ring-finger*.

ANNULET, in architecture a small square member in the Doric capital, under the quarter round.

Annulet is also a narrow flat moulding, which is common to divers places of the column, as in the bases, capitals, &c. It is the same member which Vitruvius calls a *fillet*; Palladio, a *listil* or *cinçure*; Scamozzi, and Mr Brown, a *supercilium*, *list*, *tinea*, *eyebrow*, *square*, *rabbit*. See ARCHITECTURE.

Annulet, a little circle, borne as a charge in coats-of-arms, as also added to them as a *difference*. Among the Romans it represented liberty and nobility. It also denotes strength and eternity, by reason of its circular form.

When this figure is added as a difference, some authors assert, that it serves to remind the bearer to achieve great actions.

ANNULLING, a term sometimes used for cancelling or making void a deed, sentence, or the like.

ANNUNCIADA, **ANNUNTIADA**, or **ANNUNTIA-TA**, an order of knighthood in Savoy, first instituted by Amadeus I. in the year 1409: their collar was of 15 links, interwoven one with another, in form of a true-lover's knot; and the motto, F. E. R. T. signifying,

Annun-
ciada
||
Anolymp-
piades.

Fortitudo ejus Rhodum tenuit. Amadeus VIII. gave the name *Annunciada* to this order, which was formerly known by that of *the knot of love*; changing at the same time the image of St Maurice patron of Savoy, which hung at the collar, for that of the Virgin Mary; and, instead of the motto above-mentioned, substituting the words of the angel's salutation.

ANNUNCIADA is also the title of several religious orders, instituted at different times, and at different places, in honour of the annunciation. See the next article.

ANNUNCIATION, the tidings brought by the angel Gabriel to the Virgin Mary of the incarnation of Christ.

ANNUNCIATION is also a festival, kept by the church on the 25th of March, in commemoration of these tidings. This festival appears to be of very great antiquity. There is mention made of it in a sermon which goes under the name of *Athanasius*. Others carry it up to the time of Gregory Thaumaturgus, because there is a sermon likewise attributed to him upon the same subject. But the best critics reject both these writings as spurious. However, it is certain, this festival was observed before the time of the council of Trullo, in which there is a canon forbidding the celebration of all festivals in Lent, excepting the Lord's day, and the feast of the annunciation: so that we may date its original from the seventh century.

In the Romish church, on this feast, the pope performs the ceremony of marrying or cloystering a certain number of maidens, who are presented to him in the church, clothed in white serge, and muffled up from head to foot: An officer stands by, with purses containing notes of 50 crowns for those who make choice of marriage, and notes of a hundred for those who choose to veil.

ANNUNCIATION is likewise a title given by the Jews to part of the ceremony of the passover.

ANNUNCIATOR, the name of an officer in the church of Constantinople. It was his business to inform the people of the festivals that were to be celebrated.

ANODYNE from α privative, and $\acute{o}\delta\omicron\nu\alpha$, *doleo*; or α neg. and $\acute{o}\delta\omicron\nu\alpha$, *pain*); a term applied to medicines which ease pain, and procure sleep. They are divided into three sorts, viz. 1. Paregorics, or such as assuage pain. 2. Hypnotics, or such as relieve by procuring sleep. 3. Narcotics, or such as ease the patient by stupifying him.

Opiates and narcotics destroy sensation. Some hypnotics and paregorics, as nitre, camphor, &c. procure ease and sleep by removing the offending cause. Camphor is said to be the best anodyne in nervous cases and at the decline of fevers. The doses of these medicines are generally regulated by the pulse.

ANOINTERS, a religious sect in some parts of England, so called from the ceremony they used of anointing all persons before they admitted them into their church. They founded their opinion of anointing upon the fifth of James, verses 14. and 15.

ANOLYMPIADES, in antiquity, a name given by the Elians to those Olympic games which had been celebrated under the direction of the Pisæans and Arcadians. The Elians claimed the sole right of managing the Olympic games, in which they sometimes met with competitors. The hundred and fourth Olympiad was celebrated by order of the Arcadians, by

whom the Elians were at that time reduced very low: this, as well as those managed by the inhabitants of Pisa, they called $\alpha\nu\omicron\lambda\upsilon\mu\pi\iota\alpha\delta\alpha\varsigma$, that is, "unlawful Olympiads;" and left them out of their annals, wherein the names of their victors and other occurrences were registered.

ANOMALISTICAL YEAR, in astronomy, the time that the earth takes to pass through her orbit: it is also called the *Periodical Year*. The space of time belonging to this year is greater than the tropical year, on account of the procession of the equinoxes. See ASTRONOMY.

ANOMALOUS, a term applied to whatever is irregular, or deviates from the rule observed by other things of the like nature.

ANOMALOUS Verbs, in grammar, such as are not conjugated conformably to the paradigm of their conjugation. They are found in all languages. In Latin, the verb *lego* is the paradigm of the third conjugation; and runs thus, *lego, legis, legit*: By the same rule it should be *fero, feris, ferit*; but we say *fero, fers, fert*: *fero*, then, is an anomalous verb. In English the irregularity relates often to the preter tense and passive participle: for example, *give*, were it formed according to rule, would make *gived* in the preter tense and passive participle; whereas, in the former, it makes *gave*, and in the latter *given*.

ANOMALY, in astronomy, an irregularity in the motion of the planets, whereby they deviate from the aphelion or apogee,

ANOMIA, in zoology, a genus of insects belonging to the order of vermes testacea. The shell is bivalve, and the valves are unequal. One valve is perforated near the hinge; affixed by that perforation to some other body. There are 25 species of the anomia; of which only two are natives of the British seas, viz. 1. The ehippium, with the habit of an oyster; the one side convex, the other flat; perforated; adherent to other bodies, often to oyster-shells, by a strong tendinous ligature; colour of the inside perlaceous. Size, near two inches diameter. 2. The squamula, with shells resembling the scales of fish; very delicate, and silvery; much flattened; perforated; very small. Adheres to oysters, crabs, lobsters, and shells. The species of this genus are commonly called *Beaked cockles*. No name has been given to the fish that inhabit it; for the recent shell of this kind are so very rare, that there is scarcely one to be found perfect. They are perhaps, as well as that which has given its form to the *cornu amonis*, inhabitants of the deepest parts of the ocean; consequently it must be some extraordinary agitation of that great body of water that can bring them at all to our knowledge in their recent state.

The fossil species of the *Anomia* genus are uncommonly numerous in this island, in our chalk-pits and limestone-quarries; and, in Gloucestershire, they are as common on the ploughed lands as pebbles in other places.

ANOMOEANS, in ecclesiastical history, the name by which the pure Arians were called in the fourth century, in contradiction to the Semi-Arians. The word is formed from the Greek, $\alpha\nu\omicron\mu\omicron\iota\omicron\varsigma$, *different, dissimilar*: For the pure Arians asserted, that the Son was of a nature different from, and in nothing like, that

Anomali-
stical
||
Anomoe-
ans.

Anomor-
homboidia
||
Anorexia.

that of the Father: whereas the Semi-Arians acknowledged a likeness of nature in the Son; at the same time that they denied, with the pure Arians, the substantiality of the World.—The Semi-Arians condemned the Anomœans in the council of Selencia; and the Anomœans in their turn condemned the Semi-Arians in the councils of Constantinople and Antioch, erasing the word *ομοιος*, *like*, out of the Formula of Rimini and that of Constantinople.

ANOMORHOMBOIDIA, in natural history, the name of a genus of spars; the word is derived from the Greek *ανωμαλως*, *irregular*, and *ρομβοειδης*, a *rhomboidal* figure. The bodies of this genus are pellucid crystalline spars of no determinate or regular external form, but always breaking into regularly rhomboidal masses; easily fissile, and composed of plates running both horizontally and perpendicularly thro' the masses, but cleaving more readily and evenly in an horizontal, than in a perpendicular direction; the plates being ever composed of irregular arrangements of rhomboidal concretions. Of this genus there are five known species. 1. A white, bright, and shattery one; found in great quantities in the lead-mines of Derbyshire, Yorkshire, and Wales. 2. A milk-white, opaque, and shattery one, found in some parts of France, and very plentifully in Germany, and sometimes in Wales and Scotland, and in the hills of Yorkshire. 3. A hard, dull, and snow-white one, found in some of the mines in Derbyshire, and in many of our northern counties. 4. A hard grey and pellucid one, found in the lead-mines of Yorkshire, and very common in Germany. And, 5. A pellucid and colourless one; this is found in the lead-mines of Derbyshire and Yorkshire. All these in some degree have their double refraction of the island crystal. See *ISLAND-CRYSTAL*.

ANONIS, in botany. See **ONONIS**.

ANONYMOUS, something that is nameless, or of which the name is concealed. It is a term usually applied to books which do not express the author's name, or to authors whose names are unknown.

ANONYMOUS in Commerce.—Partnerships in trade in France are styled anonymous, when they are not carried on under any particular name, but wherein each of the partners trades visibly on his own account, and in his own name; after which all the partners give one another an account of their profit or loss in trade. These sorts of partnerships are concealed, and known only to the parties themselves.

ANONYMOUS Partnerships in Trade, are also in France, such, wherein persons of fortune and quality deposit sums of money, in order to share of the profits and loss. To this end those who furnish the capital have no trouble in carrying on the trade, nor do their names appear to be any way interested therein.

ANONYMOUS, in law. The sending anonymous letters demanding money, &c. is felony by the Black Act, 9. Geo. I. cap. 22.

ANOREXIA, **ANOREXY**, (from *α neg.* and *αρεσις*, *appetite*;) a want of appetite, or a loathing of food. The disorder is either original or symptomatic. When it is original, its causes are, bad diet, too free drinking, voraciousness, &c.: In which cases, a vomit or two of ipecacuanha may be taken; and temperance, a light but cordial nourishing diet, and daily exercise, persisted in, will generally effect a recovery. But it is

more frequently a symptom of some other disorder: and then the cure depends on the removal of the original one.

ANOSSE, a province of the island of Madagascar, lying between Lat. 23. 18. and 26. 0. S. It is watered by many rivers, most of which run into the *Franchere*, *Ramevatte*, or *Immour*, the spring of which is in a mountain called *Manghage*, and discharges itself into the sea in Lat. 25. 18. S. The mouth of this river is often stopped, and the course to the sea interrupted, unless kept open by the overflowings of great rains and high tides. The water runs salt one league above the mouth, particularly in a free communication with the sea. A lake, called *Ambou*, is formed at the mouth, half a league wide, with depth sufficient for any ship if the mouth of the river was kept open. Next to bigness to the Franchere is the Manghafia, which springs from a mountain called *Siliva*, and empties itself into the sea, where large ships may ride at anchor. Crocodiles breed in these and all the other rivers of the island.

Between the two rivers above mentioned lies Cape St Romain, half a mile distant from the mouth of the Franchere, and which runs from the north-west six or seven leagues into the sea. When the Cape is passed the coast forms a great bay, in the shape of a cross, which extends to the mouth of a river called *Dian Panouge* or *Pitorab*. In the middle of this bay the land runs out, and almost forms a peninsula called *Tholangare*. Fort Dauphin lies to the north of this peninsula, and Port Dauphin over against it. This province has several other peninsulas and small islands belonging to it. The country is beautiful; abounds in fruit-trees; is fertile in pasture for cattle; and, if carefully cultivated, would produce all the necessaries of life. It is surrounded by high mountains, which are covered with woods and shrubs; but, about four miles distant from Fort Dauphin, the adjacent hills are quite destitute of verdure. The French often dug in this neighbourhood, expecting to meet with mines of gold and silver, particularly in one mountain where several springs flow near each other and empty themselves into a neighbouring river. In this river they found several stones and heaps intermixed with yellow clay, with a great quantity of black and white spangles shining like silver, which they carefully pounded and washed, but without effect. About 60 yards above these springs the grass, and every sort of vegetable, appears half dried and yellow, from a metalline sulphur, which gives that aspect; but the top of the mountain is covered with a fresh and beautiful verdure. It is said that the Portuguese found gold at the foot of this mountain on the north side, but that the place they had dug was filled up by the chiefs of the country after the Portuguese had been driven out.

The province of Anossi is inhabited by three different sorts of whites, and four sorts of negroes. The whites are distinguished by the names of *Robandrians*, *Anacandrians*, and *Ondzatfi*. The whites are distinguished from the negroes by the general name of *Zafferamini*, or *Rahimini*; and the Robandrians are distinguished above the other whites. When they proceed to an election of a sovereign, whom they call *Ompiandrian*, or *Dian Bahouache*; he is chosen from the Robandrian race. Next to him the others hold the rank of princes, and are honoured as such by all the rest.

Anossi.

Anossi.

rest of the subjects. The Anacandrians are descendants of the chiefs, but who have degenerated, and are accounted the bastards of princes, or those who are descended from a Rohandrian and any inferior white or black woman. These are likewise called by the name of *Ontempassemaca*, or people from the sandy parts of Mecca, from whence, the say, came the Rohandrians. Both the Rohandrians and Anacandrians wear long hair, which hangs down in curls; and enjoy the privilege of killing beasts. The Ondzatsi, or lowest class of whites, are descended from the bastards of the Anacandrians. These are all fishermen, and are allowed to kill no land animal except a chicken.

The four classes of negroes are named *Voadziri*, *Lohavohits*, *Ontfoa*, and *Ondeves*. The *Voadziri*, the most powerful and the richest, are masters of several villages, and descended from the original lords of the country. They enjoy the privilege of killing beasts, when at a distance from the whites, and no Rohandrian or Anacandrian in the village. The *Lohavohits* are descendants from the *Voadziri*, and also lords; but with this difference, that the one commands a whole district, and the jurisdiction of the others extends only to their own village and family. They are also permitted to kill those beasts they intend to eat, when at a distance from the whites. The *Ontfoa* are next to the *Lohavohits*, and are their near relations. The *Ondeves* are the lowest of all, being originally slaves by father and mother. The *Voadziri*, *Lohavohits*, and *Ontfoa*, enjoy the privilege of submitting themselves, on the death of their lord or king, to any chief they please. In return for such homage, the new lord makes them a present, in consequence of which he becomes heir to all their possessions. Hence the lower classes both of whites and blacks, when death approaches, are under the greatest concern and anguish of mind, well knowing that their lords will not fail to deprive their children of every thing they possess. The *Ondeves* have not the same liberty with the others; but, in times of famine, the chiefs are obliged to supply them with necessaries; which if they fail to do, they have the liberty of submitting themselves to new masters. The inhabitants of this province have no temples, and very little appearance of religion; only they keep up a custom of immolating beasts upon particular occasions, as in sickness, planting yams or rice, on assemblies, &c. They offer the first-born beast to the devil and to God, naming the devil first, in this manner, *Dianbilis Aminhanbare*, or "Lord Devil and God."—There are several towns on the river Franchere; and near this river the Portuguese had a fort built upon a steep rock, and several buildings below, with inclosures, which furnished all sorts of necessaries for their subsistence; but they were all massacred by the natives.

This province seems originally to have been inhabited by negroes. The whites or *Zaferamini* settled in it about 200 years ago, and conquered the negroes. But they themselves were conquered by the French, though under the government of a king whom they honoured as a god. In 1642, Captain Rivault obtained a permission to establish a colony in this part of the island; and accordingly he took possession of it in the name of the king of France, in the month of September, that same year. The French landed 200 men, well armed, and provided with store of ammunition and other necessaries

for building a fort, which they immediately set about; but no sooner did the natives observe their intention, than they used their utmost art to prevent their design from taking effect. This created a war, in which the French were victors; and, the natives becoming in time much better reconciled to them, they intermarried, and lived up and down in several towns at some distance from one another, not above five or six in a place. This tranquillity lasted for some years; but at last the natives, growing jealous, resolved to free themselves from a foreign yoke; and accordingly formed a conspiracy to cut off all the French in one day; which they soon after effected, not leaving a single person alive. In 1644 the above mentioned Fort Dauphin was erected in Lat. 25. 6. S. Many buildings were erected, behind the Fort, adjoining to the governor's house, with great inclosures that produced every sort of fruit and kitchen-herb. In 1656 this fort was accidentally destroyed by fire; but was soon after repaired, and still continues, notwithstanding the catastrophe above mentioned, and its garrison carries on frequent wars with the natives.

ANOTTA, or ARNOTTA, in dyeing, an elegant red colour, formed from the pellicles or pulp of the seeds of the *Bixa*, a tree common in South America. It is also called *Terra Orleana*, and *Roucou*.

The manner of making anotta is as follows: The red seeds, cleared from the pods, are steeped in water for seven or eight days, or longer, till the liquor begins to ferment; then strongly stirred, stamped with wooden paddles and beaters, to promote the separation of the red skins: this process is repeated several times, till the seeds are left white. The liquor, passed through close cane-sieves, is pretty thick, of a deep red colour, and a very ill smell; in boiling, it throws up its colouring matter to the surface in form of scum, which is afterwards boiled down by itself to a due consistence, and made up while soft into balls. The anotta commonly met with among us, is moderately hard and dry, of a brown colour on the outside, and a dull red within. It is difficultly acted upon by water, and tinges the liquor only of a pale brownish-yellow colour. In rectified spirit of wine, it very readily dissolves, and communicates a high orange or yellowish red. Hence it is used as an ingredient in varnishes, for giving more or less of an orange-cast to the simple yellows. Alkaline salts render it perfectly soluble in boiling water, without altering its colour. Wool or silk boiled in the solution acquire a deep, but not a very durable, orange-dye. Its colour is not changed by alum or by acids, any more than by alkalis: but when imbibed in cloth, it is discharged by soap, and destroyed by exposure to the air. It is said to be an antidote to the poisonous juice of manioc or cassava.—Labat informs us, that the Indians prepare an anotta greatly superior to that which is brought to us, of a bright shining red colour, almost equal to carmine: that, for this purpose, instead of steeping and fermenting the seeds in water, they rub them with the hands, previously dipt in oil, till the pellicles come off, and are reduced into a clear paste; which is scraped off from the hands with a knife, and laid on a clean leaf in the shade to dry. De Laet, in his notes on Margrave's natural history of Brazil, mentions also two kinds of anotta; one of a permanent crimson colour, used as a fucus or paint for the face; and another which gives a colour inclining more

Anotta.

Anout
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Anfarians.

more to that of saffron. This last, which is our anotta, he supposes to be a mixture of the first sort with certain resinous matters, and with the juice of the root of the tree. The wax or pulp in which the seeds are inclosed is a cool agreeable rich cordial, and has been long in use among the Indians and Spaniards in America, who still mix it with their chocolate, both to heighten the flavour and raise the colour. It is said to be a successful remedy in bloody-fluxes. The roots have much the same properties with the wax; but these are observed to work more powerfully by the urinary passages: they are used by some people in their broths, and seem to answer all the purposes of the pulp, but in a more faint degree. See Bixa.

ANOUT, a small island in the Schagerrack, or that part of the sea of Denmark which has Norway on the north, Jutland on the west, and the isle of Zealand on the south; it lies in 13. 0. E. Long. and 56. 36. N. Lat.

ANSÆ, in astronomy, implies the parts of Saturn's ring projecting beyond the disk of the planet.—The word is Latin, and properly signifies *handles*: these parts of the ring appearing like handles to the body of the planets.

ANSARIANS, a people of Syria, so called in the country, but styled in Delisle's maps *Enfarians*, and in those of Danvill, *Naffaris*. The territory occupied by these Ansaria is that chain of mountains which extends from Antakia to the rivulet called *Nabr-el-Kabir*, or the Great River. The history of their origin, though little known, is yet instructive. The following account is from the *Bibliothèque Orientale* of Assemani, a writer who has drawn his materials from the best authorities.

"In the year of the Greeks 1202 (A. D. 891), there lived at the village of Nasar, in the environs of Koufa, an old man, who, from his fastings, his continual prayers, and his poverty, passed for a saint: several of the common people declaring themselves his partizans, he selected from among them twelve disciples to propagate his doctrine. But the commandant of the place, alarmed at his proceedings, seized the old man, and confined him in prison. In this reverse of fortune, his situation excited the pity of a girl who was slave to the goaler, and she determined to give him his liberty: an opportunity soon offered to effect her design. One day when the goaler was gone to bed intoxicated, and in a profound sleep, she gently took the keys from under his pillow, and after opening the door to the old man, returned them to their place unperceived by her master: the next day when the goaler went to visit his prisoner, he was extremely astonished at finding he had made his escape, and the more so since he could perceive no marks of violence. He therefore judiciously concluded he had been delivered by an angel, and eagerly spread the report, to avoid the reprehension he merited: the old man, on the other hand, asserted the same thing to his disciples, and preached his doctrines with more earnestness than ever. He even wrote a book, in which, among other things, he says, 'I such a one, of the village of Nasar, have seen Christ who is the word of God, who is Ahmad, son of Mohammad, son of Hanafa, of the race of Ali; who also is Gabriel: and he said to me, Thou art he who readeth (with understanding): thou art the man who speaketh truth; thou art the camel which pre-

serveth the faithful from wrath; thou art the beast which carrieth their burden; thou art the (Holy) Spirit, and John, the son of Zachary. Go, and preach to men that they make four genuflections in praying; two before the rising of the sun, and two before his setting, turning their faces towards Jerusalem: and let them say, three times, God Almighty! God Most High! God Most Great! Let them observe only the second and third festival; let them fast but two days annually; let them not wash the prepuce, nor drink beer, but as much wine as they think proper; and lastly, let them abstain from the flesh of carnivorous animals.' This old man passing into Syria, propagated his opinions among the lower orders of the country people, numbers of whom believed in him: And after a few years he went away, and nobody ever knew what became of him."

Such was the origin of these Ansarians, who are, for the most part, inhabitants of the mountains before mentioned.

The Ansaria are divided into several tribes or sects; among which are distinguished the Shamfia, or adorers of the sun; the Kelbia, or worshippers of the dog; and the Kadmoufia, who are said to pay a particular homage to that part in women which corresponds to the priapus.

Many of the Ansaria believe in the metempsychosis; others reject the immortality of the soul; and in general, in that civil and religious anarchy, that ignorance and rudeness which prevail among them, these peasants adopt what opinions they think proper, following the sect they like best, and frequently attaching themselves to none.

Their country is divided into three principal districts farmed by the chiefs called *Mokaddamim*. Their tribute is paid to the Pacha of Tripoli, from whom they annually receive their title. Their mountains are in general not so steep as those of Lebanon, and consequently are better adapted to cultivation; but they are also more exposed to the Turks; and hence doubtless, it happens, that with greater plenty of corn, tobacco, wines, and olives, they are more thinly inhabited than those of their neighbours the MARONITES and the DRUZES.

ANSE, an ancient town of France, in the Lyonois, ten miles north of Lyons, Long. 6. 55. N. Lat. 45. 55.

ANSELM, archbishop of Canterbury, in the reigns of William Rufus and Henry I. He was born in the year 1033, at Aost, a town in Savoy at the foot of the Alps. He became a monk in the Abbey of Bec in Normandy; of which he was afterwards chosen prior, and then abbot. In the year 1092, he was invited over to England by Hugh Earl of Chester; and in the year following was prevailed on, as we are told, with great difficulty, to accept the archbishopric of Canterbury. He enjoined celibacy on the clergy; for which he was banished by king Rufus, but recalled by Henry at his coming to the crown. He refused to consecrate such bishops as were invested by the king, according to pope Urban's decree; flatly denying it to be the king's prerogative: for this he was outed again; till, the pope and king agreeing, he was called in 1107. In short, from the day of his consecration to that of his death, he was continually employed in fighting the prerogative of the church against that of the crown; and for that purpose spent

Anfarians
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spent much of his time in travelling backwards and forwards between England and Rome, for the advice and direction of his Holiness. At the council of Bari, in the kingdom of Naples, the pope being puzzled by the arguments of the Greeks against the Holy Ghost's proceeding from the Father, he called upon Anselm, who was present, and he discussed their objections with great applause. Priests call him a resolute saint; to other people he appears to have been an obstinate and insolent priest. He wrought many miracles, if we believe the author of his life, both before and after his death, which happened at Canterbury, in the 76th year of his age, anno 1109. He was canonised in the reign of Henry VII. Anselm, though we may disregard him as a saint, deserves to be remembered as one of the principal revivers of literature, after three centuries of profound ignorance.

His works have been printed in different years, and at different places, viz. Nuremb, 1491. Paris 1544 and 1549. Venice 1549. Cologne 1573 and 1612. Lyons 1630. But the best is that of father Gerberon, printed at Paris 1675. It is divided into three parts; the first contains dogmatical tracts, and is intitled *Monologia*; the second contains practical and devotional tracts; the third part consists of letters, in four books.

ANSER, in ornithology, the trivial name of a species of anas. See ANAS.

ANSER, in astronomy, a small star, of the fifth or sixth magnitude, in the milky way, between the swan and eagle, first brought into order by Hevelius.

ANSERES, the name which Linnæus gives to his third order of birds. See ZOOLOGY, n° 8.

ANSIBARII, or ANSIVARII, an ancient people of Germany, situated somewhere in the neighbourhood of the Chauci. All we know of their history is, that, in the reign of the Emperor Nero, they were driven from their own possessions by the Chauci. Being then in a forlorn condition, they took possession of some uninhabited lands, which had been used as pasture for the horses of the Roman soldiers. They were led by one Boiocalus, a man of great valour, and of known fidelity to the Romans. He remonstrated to the Romans, who objected to their taking possession of these lands, That the territory in dispute was large; and requested, that it might be allowed to an unhappy people, driven from their own habitations: that, at the same time, wide tracts might be retained for the horses and cattle of the soldiers to graze in; that it was inconsistent with humanity to famish men in order to feed beasts, &c. and at last, lifting up his eyes to heaven, he asked the celestial luminaries how they could behold a desolate soil, and if they would not more justly let loose the sea to swallow up usurpers, who had engrossed the whole earth? To this the Roman commander, Avitus, replied, that the weakest must submit to the strongest; and that since the gods, to whom they had appealed, had left the sovereign judgment to the Romans, they were resolved to suffer no other judges than themselves. To Boiocalus himself, however, he privately offered lands as a reward for his long attachment to the Romans: but this offer the brave German rejected, as a price for betraying his people; adding, "A place to live in we may want, but a place to die in we cannot." The Anfibarii now invited the neighbouring nations to join them against the Romans; but they, dreading the

power of that nation, refused to give them any assistance: upon which they applied to the neighbouring nations, begging leave to settle in their territories; but being every where driven out as enemies and intruders, these unhappy people were reduced to wander up and down till every one of them perished.

ANSIKO, a kingdom of Africa, bounded on the west by the river Umbre which runs into the Zaire, the kingdom of Wangua, and the Amboes who border on Loango; on the north, by some deserts of Nubia; and on the south, by Songo and Sonda, provinces of Congo. Here are great numbers of wild beasts, as lions, rhinoceroses, &c. and many copper mines. The king of Ansiko, or the great Macoco, commands 13 kingdoms, and is esteemed the most powerful monarch in Africa. The inhabitants of Angola have a tradition, that this is the proper country of the Giagas, who came originally from Sierra Leona, and over-ran like a torrent the whole coast as far as Benguela; that, being weakened by numerous battles, and unable to force the defiles in order to return to Sierra Leona, they arrived on the borders of Monomotapa, where being defeated, they were forced to remain in the provinces of Ansiko. Be this as it will, the Ansikans yield not in the least to the Giagas in fierceness and barbarity. They are so accustomed to the eating of human flesh, that it is asserted they have markets where it is publicly sold, and that there are no other graves for the dead than the bellies of the living. They try the courage of their prisoners of war by shooting at them as at marks, directing their arrows above or around their heads; and whoever discovers the least signs of fear, is immediately devoured without remedy. Those who appear intrepid and resolute, have their noses and ears bored, and two fore-teeth of the upper jaw drawn. They are then improved in barbarity, by accustoming them to the most horrid cruelties.

The Ansikans are neat, well-proportioned, and strong; wandering about from place to place, without either sowing or reaping. They are dreaded for their extreme brutality, and never traded with by the Europeans. Their language is barbarous, and difficult to be learned, even by the inhabitants of Congo. The most distinguished among them wear red and black caps of Portuguese velvet: the lower ranks go naked from the waist upwards; and, to preserve their health, anoint their bodies with a composition of pounded white sandal-wood and palm-oil. Their arms are battle-axes, and small but very strong bows adorned with serpents skins. Their strings are made of supple and tender shoots of trees, that will not break, and their arrows of hard and light wood. These people, who kill birds flying, shoot with such surprising swiftness, that they can discharge 28 arrows from the bow before the first falls to the ground. With equal dexterity they manage their battle-axes; one end of which is sharpened and cuts like a wedge, and the other flattened like a mallet, with a handle set between, about half the length of the iron, rounded at the end like an apple, and covered with the skin of a serpent.—The current money in this country is the zimbis or shell, which is fished for, and passes among several African nations.—They worship the sun as their chief deity; whom they represent by the figure of a man, and the moon by that of a woman. They have also an infinite number of

Ansko.

Anflo,
Anfon.

of inferior deities, each individual having a particular idol whom he addresses on certain occasions.

ANSLO, a sea-port town of Norway, in the province of Aggerhuys, with a bishop's see. The supreme court of justice is held here for Norway. It is seated on a bay of the same name. E. Long. 10. 14. N. Lat. 50. 24.

ANSON (George), a gentleman whose merit and good fortune, as a naval commander, exalted him to the rank of nobility. He was the son of William Anson, Esq; of Huckborough, in Staffordshire; and, showing an early inclination for the sea, received a suitable education. The first command he enjoyed was that of the *Weazle* sloop in 1722; but the most memorable action of his life, and the foundation of his future good fortune, took place on his receiving the command of five ships, a sloop, and two victuallers, equipped to annoy the Spaniards in the South Seas, and to co-operate with admiral Vernon across the isthmus of Darien; an expedition the principal object of which failed by the unaccountable delay in fitting him out. He failed, however, in Sept. 1740; doubled Cape Horn in a dangerous season; lost most of his men by the scurvy; and with only one remaining ship, the *Centurion*, crossed the great Pacific Ocean. If no considerable national advantage resulted from this voyage, Commodore Anson made his own fortune, and enriched his surviving companions, by the capture of a rich galleon on her passage from Acapulco to Manilla; with which he returned home round the Cape of Good Hope. If he was lucky in meeting this galleon, he was no less fortunate in escaping a French fleet then cruising in the channel, by sailing through it during a fog. He arrived at Spithead in June 1744. In a short time after his return, he was appointed rear-admiral of the blue, and one of the lords of the admiralty. In April 1745, he was made rear-admiral of the white, and the following year vice-admiral of the blue; at which time he was chosen to represent the borough of Heydon in parliament. In 1747, being on board the prince George of 90 guns, in company with Admiral Warren, and 12 other ships, he intercepted, off Cape Finisterre, a powerful fleet, bound from France to the East and West Indies; when, by his valour and conduct, he again enriched himself and his officers, and at the same time strengthened the British navy, by taking six men of war and four East-Indiamen, not one of them escaping. The French admiral, M. Jonquiere, on presenting his sword to the conqueror, said, *Mon-sieur, vous avez vaincu l'Invincible, et la Gloire vous suit*: "Sir, you have conquered the *Invincible*, and *Glory* follows you;" pointing to the ships, named the *Invincible* and the *Glory*, he had taken. For his signal services, his late majesty created him Baron of Soberton in Hants. The same year he was appointed vice-admiral of the red; and, on the death of Sir John Norris, was made vice-admiral of England. In 1748 he was made admiral of the blue: he was afterwards appointed first lord of the admiralty, and was at length made admiral and commander in chief of his majesty's fleet; in which rank he continued, with a very short interval, until his death; and the last service he performed was to convoy Queen Charlotte to England. He died in June 1762. No performance ever met with a more favourable reception, than the account of Anson's

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voyage round the world. Though it is printed under the name of his chaplain, it was composed under his lordship's own inspection, and from the materials he himself furnished, by the ingenious Mr Benjamin Robins.

ANSPACH (the marquisate of), a small territory of Franconia, in Germany, bounded on the north by the bishoprics of Wartburg and Bamberg, which last likewise lies to the west; by the earldoms of Holach and Oeting, with the bishopric of Aichstet, on the south; and the palatinate of Bavaria and the territory of Nuremberg on the east. The country is fruitful, and interspersed with woods, which render it agreeable for hunting. Besides the city Anspach, which is the capital, the chief towns are Kreglin, Swasbach, Kreilshelm, Rot, and Wasser-Truding.

ANSPACH is a small but pretty town, very well built, and has several churches. It is walled round, but has no other fortifications. In the palace there is a remarkable cabinet of curiosities. It is seated on a river of the same name, and belongs to the house of Brandenburg. E. Long. 10. 42. N. Lat. 49. 14.

ANSPESSADES, in the French armies, a kind of inferior officers in the foot, below the corporals, but above the common centinels. There are usually four or five of them in a company.

ANSTRUTHER *Easter* and *Wester*, two royal boroughs of Scotland, situated on the south-east coast of the county of Fife, in W. Long. 2. 25. N. Lat. 56. 20.

ANT, in zoology. See FORMICA and TERMES.

ANT-Bear, or Ant-eater, in zoology. See MYRMECOPHAGA.

ANT-Eggs, a name popularly given to a kind of little white balls found in the banks or nests of ants, ordinarily supposed to be the ova of this insect.

Late naturalists have observed that these are not properly the ants eggs, but the young brood themselves in their first state; they are so many little vermiculi wrapped up in a film, or skin, composed of a sort of silk, which they spin out of themselves as silk-worms and caterpillars do. At first they are hardly observed to stir: but, after a few days continuance, they exhibit a feeble motion of flexion and extension; and begin to look yellowish and hairy, shaped like small maggots, in which shape they grow up till they are almost as large as ants. When they pass their metamorphosis, and appear in their proper shape, they have a small black speck on them close to the anus, of the inclosed ant, which M. Lewenhoeck probably enough imagines to be the feces voided by it. Dr Ed. King opened several of these vulgarly reputed eggs; in some of which he found only a maggot in the circumstances as above described; while in another the maggot had begun to put on the shape of an ant about the head, having two little yellow specks, where the eyes were to be. In others, a further progress was observed, the included maggots being furnished with every thing to complete the shape of an ant, but wholly transparent, the eyes only excepted, which were as black as bugles. Lastly, in others, he took out every way perfect and complete ants, which immediately crept about among the rest. These supposed ants eggs are brought up every morning in summer, near the top of the bank, where they are lodged all the warm part of the day, within reach of

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Ant-hills
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Anta.

the sun's influence. At night, or if it be cool, or like to rain, they carry them down to a greater depth; so that you may dig a foot deep e'er you come at them. The true ants eggs are the white substance which, upon opening their banks, appears to the eye like the scatterings of fine white sugar, or salt, but very soft and tender. Examined by a microscope, it is found to consist of several pure, white appearances, in distinct membranes, all figured like the lesser sort of birds eggs, and as clear as a fish's bladder. The same substance is found in the bodies of the ants themselves. On this spawn, when emitted, they lie in multitudes, to brood, till in some time it is turned into little vermicles as small as mites, commonly called *ant eggs*.

Ant-Hills, are little hillocks of earth, which the ants throw up for their habitation and the breeding of their young. They are a very great mischief to dry pastures, not only by wasting so much land as they cover, but by hindering the scythe in mowing the grass, and yielding a poor hungry food pernicious to cattle. The manner of destroying them is to cut them into four parts from the top, and then dig into them so deep as to take out the core below, so that, when the turf is laid down again, it may lie somewhat lower than the level of the rest of the land: by this means it will be wetter than the rest of the land; and this will prevent the ants from returning to the same place, which otherwise they would certainly do. The earth that is taken out must be scattered to as great a distance every way as may be, otherwise they will collect it together and make another hill just by. The proper time for doing this is winter; and if the places be left open, the frost and rains of that time of the year will destroy the rest: but in this case care must be taken that they are covered up early enough in the spring, otherwise they will be less fertile in grass than the other places. In Hertfordshire they use a particular kind of spade for this purpose. It is very sharp, and formed at the top into the shape of a crescent, so that the whole edge makes up more than three fourths of a circle; this cuts in every part, and does the business very quickly and effectually. Others use the same instruments that they do for mole hills. Human dung is a better remedy than all these, as is proved by experiment; for it will kill great numbers of them, and drive all the rest away if only a small quantity of it be put into their hills.

Acid of ANTS, an acid produced by distilling millions of these insects, either without addition, or with water. It resembles vinegar in many respects; but differs from it in forming crystals with magnesia, iron, and zinc. Its attractions are not yet determined, but are supposed to coincide with those of vinegar.

ANTA, in the ancient architecture, a square pilaster, placed at the corners of buildings.

ANTA, or *Ante*, a small kingdom on the gold-coast of Africa, extending about ten leagues in length.—The country is covered with large trees, among which stand a number of fine villages. The soil is exceedingly rich, and the face of the country beautiful. The air is also much more salubrious than in other places of the gold-coast; it being observed by all writers, that the number of deaths here bears no proportion to that on any other part on the coasts of Guinea. This country contains the following villages, which deserve a particular description on account of the commerce they

drive; viz. *Bourtrey*, *Tokorari Sukoada*, and *Sama*; for which, see those articles.—Formerly Anta was potent and populous, inhabited by a bold and rapacious people, who greatly annoyed the Europeans by their frequent incursions; but by continual wars with their neighbours they are now greatly enfeebled, and the country in a manner depopulated. The spirit of the few remaining inhabitants is fled: they are desponding, dispirited, and abject, seeking protection from the Dutch and other Europeans who have forts on this coast, and looking upon them as their best friends.

ANTACIDS, in pharmacy, an appellation given to all medicines proper to correct acid or sour humours.

Under the class of Antacids come, 1. Absorbents; as chalk, coral, sea-shells, hæmatites, and steel-filings. 2. Obtundents; as oils and fats. 3. Immutants; as lixivious salts and soaps.

ANTÆUS, in fabulous history, a giant of Libya, son of Neptune and Terra. Designing to build a temple to his father, of mens skulls, he slew all he met; but Hercules fighting him, and perceiving the assistance he received from his mother (for by a touch of the earth he refreshed himself when weary), lifted him up from the ground, and squeezed him to death.

ANTÆUS was king of Mauritania; and from several circumstances, with which we are supplied by various authors, it appears extremely probably that he was the same person with Atlas: they were both of them the sons of Neptune, who reigned over Mauritania, Numidia, and a great part of Libya; as may be naturally inferred from his having such particular marks of distinction conferred upon him by the inhabitants of those regions. They both ruled with absolute power over a great part of Africa, particularly Tingitania. Hercules defeated and slew Antæus in the same war wherein he took the Libyan world from Atlas: both Atlas and Antæus invaded Egypt, and contended with Hercules in the wars with the gods, and were both vanquished by him. Antæus, as well as Atlas, was famed for his knowledge in the celestial sciences: from whence we may fairly conclude them to have been the same king of Mauritania.

Antæus, in his wars with Hercules, who commanded an army of Egyptians and Ethiopians, behaved with great bravery and resolution. Receiving large reinforcements of Libyan troops, he cut off vast numbers of Hercules's men: but that celebrated commander having at last intercepted a strong body of Mauritanian or Libyan forces sent to the relief of Antæus, gave him a total overthrow, wherein both he and the best part of his forces were put to the sword. This decisive action put Hercules in possession of Libya and Mauritania, and consequently of all the riches in those kingdoms; hence arose the fable, that Hercules finding Antæus, a giant of an enormous size, with whom he was engaged in single combat, to receive fresh strength as often as he touched his mother earth when thrown upon her, at last lifted him up in the air and squeezed him to death. Hence likewise may be deduced the fable, intimating, that Hercules took Atlas's globe upon his own shoulders, overcame the dragon that guarded the orchards of the Hesperides, and made himself master of all the golden fruit. The golden apples, so frequently mentioned by the old mythologists, were the treasures that fell into Hercules's

Antacids,
Antæus.

Antago-
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Ante.

hands upon Antæus's defeat, the Greeks giving the Oriental word *ῥῆς*, *riches*, the signification affixed to their own term, *μυλᾶς*, *apples*. After the most diligent and impartial examination of all the different hypotheses of historians and chronologers, relating to Atlas and Antæus, we find none so little clogged with difficulties as that of Sir Isaac Newton. According to that illustrious author, Ammon, the father of Sefac, was the first king of Libya, or that vast tract extending from the borders of Egypt to the Atlantic Ocean; the conquest of which country was effected by Sefac in his father's life-time. Neptune afterwards excited the Libyans to a rebellion against Sefac; slew him; and then invaded Egypt under the command of Atlas or Antæus, the son of Neptune, Sefac's brother and admiral. Not long after, Hercules, the general of Thebais and Ethiopia for the gods or great men of Egypt, reduced a second time the whole continent of Libya, having overthrown and slain Antæus near a town in Thebais, from that event called Antæa or Antæopolis: this, we say, is the notion advanced by Sir Isaac Newton, who endeavours to prove, that the first reduction of Libya by Sefac happened a little above a thousand years before the birth of Christ, as the last by Hercules did some few years after.

ANTAGONIST, denotes an adversary, especially in speaking of combats and games.

ANTAGONIST *muscles*, in anatomy, those which have opposite functions; as flexors and extensors, abductors and adductors, &c.

ANTANACLASIS, in rhetoric, a figure which repeats the same word, but in a different sense; as, *dum vivimus, vivamus*.

ANTAGOGE, in rhetoric, a figure by which, when the accusation of the adversary is unanswerable, we load him with the same or other crimes.

ANTANDROS, (anc. geog.) a town of Mysia, on the sea-coast, at the foot of Mount Alexandria, a part of mount Ida, (Strabo, Ptolemy): it was a town of the Leleges, (Strabo); anciently called *Edonis*, then *Cimmeris*, (Pliny, Stephanus.) It takes its name from Antandros, a general of the Æoleans: it is now called *S. Dimitri*.

ANTAPHRODISIACS, in pharmacy, medicines proper to diminish the semen, and consequently extinguish or lessen all desires of venery.

ANTARCTIC, in a general sense, denotes something opposite to the arctic or northern pole. Hence antarctic circle is one of the lesser circles of the spheres, and distant only 23° 30' from the south pole, which is likewise called antarctic for the same reason.

ANTARES, in astronomy, the name of a star of the first magnitude, called also the scorpion's heart. Its longitude is 60° 13' 14" of Sagittarius; and its latitude 4° 31' 26" S.

ANTAVARE, a province of the island of Madagascar, lying about 21° 30' S. Lat. and bounded by the province and cape of Manoufi. The greatest part of it is watered by the river Mananzari, whose source is in the red mountains of Ambohitmene.

ANTE, in heraldry, denotes that the pieces are

let into one another in such a form as there is expressed; for instance, by dove-tails, rounds, swallow-tails, or the like.

ANTEAMBULONES, in Roman antiquity, servants who went before persons of distinction to clear the way before them. They used this formula, *Date locum domino meo*, i. e. "Make room or way for my master."

ANTECEDENT, in general, something that goes before another, either in order of time or place.

ANTECEDENT, in grammar, the words to which a relative refers.

ANTECEDENT, in logic, is the first of the two propositions in an enthymeme.

ANTECEDENT, in mathematics, is the first of two terms of a ratio, or that which is compared with the other.

ANTECEDENCE, in astronomy, an apparent motion of a planet towards the west, or contrary to the order of the signs.

ANTECESSOR, one that goes before. It was an appellation given to those who excelled in any science. Justinian applied it particularly to professors of civil law; and, in the universities of France, the teachers of law take the title *anteceffores* in all their theses.

ANTECURSORES, in the Roman armies, a party of horse detached before, partly to get intelligence, provisions, &c. and partly to choose a proper place to encamp in. These were otherwise called *anteceffores*, and by the Greeks *prodrömi*.

ANTEDATE, among lawyers, a spurious or false date prior to the true date of a bond, bill, or the like.

ANTEDILUVIAN, in a general sense, implies something that existed before the flood.

ANTEDILUVIAN *World*; the earth as it existed before the flood. See EARTH.

ANTEDILUVIANS, a general name for all mankind who lived before the flood, and so includes the whole of the human race from Adam to Noah and his family.

As Moses has not set down the particular time of any transaction before the flood, except only the years of the fathers age wherein the several descendants of Adam in the line of Seth were begotten, and the length of their several lives; it has been the business of chronologers to endeavour to fix the years of the lives and deaths of those patriarchs, and the distance of time from the creation to the deluge. In this there could be little difficulty were there no varieties in the several copies we now have of Moses's writings; which are, the Hebrew, the Samaritan, and the Greek versions of the Septuagint; but as these differ very considerably from one another, learned men are much divided in their opinions concerning the chronology of the first ages of the world; some preferring one copy, and some another.

That the reader may the better judge of the variations in the three copies in this period, they are exhibited in the following table, with the addition of those of Josephus as corrected by Dr Wells and Mr Whiston.

Anteambulones
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Antediluvians.

Antediluvians.

Antediluvians.

A TABLE of the Years of the Antediluvian Patriarchs.

Their ages at their sons birth.					Years they lived after their sons birth.			Length of their lives.			
		Heb.	Sam.	Sept.	Jof.	Heb.	Sam.	Sept.	Heb.	Sam.	Sept.
Adam,	-	130	130	230	130	800	800	700	930	930	930
Seth,	-	105	105	205	105	807	807	707	912	912	912
Enos,	-	90	90	190	90	815	815	715	905	905	905
Cainan,	-	70	70	170	70	840	840	740	910	910	910
Mahalaleel,	-	65	65	165	65	830	830	730	895	895	895
Jared,	-	162	62	162	62	800	785	800	962	847	962
Enoch,	-	65	65	165	65	300	300	200	365	365	365
Methufelah,	-	187	67	167	187	782	653	802	969	720	969
Lamech,	-	182	53	188	182	595	600	565	777	653	753
Noah was aged at the Flood,	}	600	600	600	600						
To the Flood,		1656	1307	2262	1556						

To this table it will be necessary, in order to explain the consequences of these variations, to add separate chronological tables, showing in what year of his con-

temporaries the birth and death of each patriarch happened, according to the computation of each of the said three copies.

A Chronological TABLE of the Years of the Patriarchs, according to the Computation of the Hebrew.

[illegible]

Antedilu-
vians.Antedilu-
vians.*A Chronological TABLE of the Years of the Patriarchs, according to the Computation of the Septuagint.*

	Years of the world.	Years of Seth.	Years of Enos.	Years of Cainan.	Years of Mahalaleel.	Years of Jared.	Years of Enoch.	Years of Methuselah.	Years of Lamech.	Years of Noah.
Adam created,	1									
Seth born, -	230									
Enos born, -	435	205								
Cainan born, -	625	395	190							
Mahalaleel born,	795	565	360	170						
Adam dies, -	930	700	495	305	135					
Jared born, -	960	730	525	335	165					
Enoch born, -	1122	892	687	497	327	162				
Seth dies, -	1142	912	707	517	347	182				
Methuselah born,	1387		852	662	492	327	165			
Enos dies, -	1340		905	715	545	380	218			
Lamech born,	1474			849	679	514	352	187		
Enoch translated,	1487			862	692	527	365	200		
Cainan dies, -	1535			910	740	575		248	61	
Noah born, -	1662				867	702		375	188	
Mahalaleel dies,	1690				895	730		403	216	28
Jared dies, -	1922				962			635	448	260
Japhet born, -	2162							875	688	500
Shem born, -	2164							877	690	502
Lamech dies,	2227							940	753	565
Methuselah dies,	2256							696		594
The Flood, -	2262									600

A Chronological TABLE of the Years of the Patriarchs, according to the Computation of the Samaritan Pentateuch.

	Years of the world.	Years of Seth.	Years of Enos.	Years of Cainan.	Years of Mahalaleel.	Years of Jared.	Years of Enoch.	Years of Methuselah.	Years of Lamech.	Years of Noah.
Adam created,	1									
Seth born, -	130									
Enos born, -	235	105								
Cainan born, -	325	195	90							
Mahalaleel born,	395	265	160	70						
Jared born, -	460	330	225	135	65					
Enoch born, -	522	392	287	197	127	62				
Methuselah born,	587	457	352	262	192	127	65			
Lamech born, -	654	524	419	329	259	194	132	67		
Noah born, -	707	577	472	382	312	247	185	120	53	
Enoch translated	887	757	652	562	497	427	365	300	233	180
Adam dies, -	930	800	695	605	535	470		343	276	323
Seth dies, -	1042	912	807	717	647	582		462	388	335
Enos dies, -	1140		905	815	745	680		553	486	433
Japhet born, -	1207			882	812	747		620	553	500
Shem born, -	1209			884	814	749		622	555	502
Cainan dies, -	1235			910	840	775		648	581	528
Mahalaleel dies,	1290				895	830		703	636	583
Jared, Methuse- lah, and La- mech, die, }	1307									
The Flood,						847		720	653	600

To the varieties exhibited in the two last tables, others might be added, by admitting the various readings of some numbers in the Samaritan and Septuagint: for as to the Hebrew copies, there is here a constant agreement among them.

The manuscript from which the Samaritan Pentateuch was published, agrees exactly with the Samari-

tan numbers given by Eusebius. But St Jerom tells us, that, in his time, there were some Samaritan copies which make Methuselah 187 years old at the birth of Lamech, and Lamech 182 at the birth of Noah, just as the Hebrew does. Now if these numbers be approved as the true original numbers, the interval from the creation to the flood will be 1556 years; differing from

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from the Hebrew computation but 100 years in the age of Jared at the birth of Enōch; and if this last be allowed to be a mistake of the transcriber, by his dropping a number, and writing 62 instead of 162, as has been suspected, the Samaritan will be perfectly reconciled with the Hebrew, and all difference between them vanish.

Scaliger, on the authority of an old Samaritan chronicle, having at the end a table of the years of the patriarchs to the time of Moses, would correct two of the Samaritan numbers in Eusebius; viz. instead of 65, the age of Mahalaleel when he begat Jared, he thinks it should be 75; and instead of 67, the age of Methuselah when he begat Lamech, he would have it 77. By which alterations he reckons 20 years more to the flood than Eusebius and the manuscript; that is, 1327. But as he acknowledges the table, whereon he grounds these corrections, contains some great absurdities, it seems unreasonable to oppose it to the joint authority of Eusebius and the Samaritan manuscript.

As to the Septuagint, in the common editions of that version, the age of Methuselah at the birth of Lamech is 167; and consequently the sum of this period, according to them, is no more than 2242. But in this case Methuselah will outlive the flood 14 years; and we may well wonder, with Eusebius, where he was preserved. To obviate this objection, we are told, that, in some copies, Methuselah is said to have lived but 782 (not 802) years after the birth of Lamech, and no more than 949 in all. But the Alexandrian manuscript entirely takes away the difficulty, by giving the same number in this place with the Hebrew.

Pezron is of opinion, that the age of Lamech at the birth of Noah should be but 182, as it is both in the Hebrew and in Josephus, supposing, with St Austin, that the present number is the error of the scribe who first copied the original Septuagint manuscript in Ptolemy's library. So that he computes 2256 years to the flood. And, if this correction be admitted, and one more mentioned also by St Austin, viz. that Lamech lived 595 years after the birth of Noah, and not 565, as in the present copies, there will then remain no other difference between the Septuagint and the Hebrew than 600 years added to the ages of the six patriarchs when they begat their sons, and Methuselah will, conformably to the Hebrew and Samaritan, die in the year of the flood.

Having premised this chronological view, we shall proceed to the history of the antediluvian patriarchs.

Of Adam in Paradise.

Of the great progenitor we are told, that "the Lord God took the man and put him into the garden." These words plainly indicate, that Adam was not created within the precincts of Paradise; and it is afterwards said, upon his being turned out of the garden, "He was sent to till the ground whence he was taken."—As to the situation of this garden, concerning which there has been so much learned but uncertain inquiry, see the article PARADISE.

Adam was doubtless created in the prime of his life, with all his powers and faculties in the highest degree of strength and vigour. His body would be graceful, and well proportioned; while his countenance was comely, and glowed with all the lustre of youthful innocence. The poet thus describes our first parents:

Adam the goodliest man, of men since born
His sons; the fairest of her daughters Eve.
——— for in their looks divine

The image of their glorious Maker shone. *Milton.*

Many have entertained an opinion (as mentioned under the article ADAM), that our first parent was created an adept in knowledge and in science, a consummate philosopher, and an accomplished divine. But the very reverse of this must be true, providing we give credit to the account which Moses gives of him. If Adam was created with intuitive knowledge, for what end was he endowed with the senses of a man, through which ideas might be conveyed to his mind, and make him capable of such improvements as arise from experience and observation? And if he originally possessed such a fund of valuable knowledge, why had he such an ardent thirst for an unwarrantable portion of more, and for the sake of this additional pittance forfeited his happiness and life? Besides, if Adam was at first all light and knowledge, and was soon after reduced to a state of ignorance and error, this transition would make a retrograde in the system of nature, quite dissimilar to that uniformity which obtains throughout the whole of the divine government and economy. Moses introduces our first parents into life in the most natural manner, as having capacities to acquire knowledge, senses to receive impressions from objects around them, and a sufficient degree of reason to form a judgment of the things perceived: yet all these faculties can only be considered as so many instruments, by the exercise of which they might be enabled to discharge the duties of their future life.

The following portrait of our first progenitor when he first came into life, drawn by the inimitable pencil of Buffon, is extremely beautiful, while it is dissonant from no part of the Mosaic history. "Let us suppose a man in the same situation with him who first received existence; a man whose organs were perfectly formed, but who was equally new to himself, and to every object which surrounded him. Were he to give a history of his thoughts, and of the manner in which he received impressions, he might give some such information as this. I remember the moment when my existence commenced. It was a moment replete with joy, with amazement and anxiety. I neither knew what I was, where I was, nor whence I came. I opened my eyes. But what an amazing increase of sensation! The light, the celestial vault, the verdure of the earth, the transparency of the waters, gave animation to my spirits, and conveyed pleasures which exceed the powers of expression. At first I believed that all these objects existed within me, and formed a part of myself. When, turning mine eyes to the sun, his splendor overpowered me. I voluntarily shut out the light, and felt a small degree of pain. During this moment of darkness, I imagined that I had lost the greatest part of my being. I was then roused with a variety of sounds. The singing of birds and the murmuring breezes formed a concert, which excited the most sweet and enchanting emotions. I listened, and was convinced that these harmonious sounds existed within me.—I made a step forwards; and afterwards renewing my motion, I walked with my face turned towards

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Smellie's Translation,
vol. iii. p. 50, &c.
(the passage here abridged).

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towards the Heavens; till I struck against a palm-tree, and felt some degree of pain. Seized with terror, I ventured to lay my hand upon the object, and perceived it to be a being distinct from myself, because it did not, like touching my own body, give me a double sensation. I resolved then to feel every object I saw, and had a strong desire to touch the sun; but stretching out my hands to embrace the Heavens, they met without any intermediate object. All objects appeared to me equally near; and it was not till after many trials that I learned to use my eye as a guide to my hand. At last the train of my ideas was interrupted, and I lost the consciousness of my existence. My sleep was profound; but having no mode of measuring time, I knew nothing of its duration. When I awakened, I was astonished to find by my side another form, perfectly similar to my own. I conceived it to be another self; and instead of losing by my sleep, I imagined myself to be doubled. I ventured to lay my hand upon this new being. With rapture and astonishment, I perceived that it was not myself, but something much more glorious and desirable."

This philosophical detail coincides with the opinion, that, excepting what portions of knowledge Adam might acquire by the exercise of his senses, his Maker taught him every thing that was necessary for his comfort and subsistence. But before the Almighty gave any instructions to our first parents, we must suppose he inspired them with the knowledge of the meaning of every word which they heard him speak; otherwise it would have been impossible that he could have had any such communication with them. The words which they heard, and were made to understand, being imprinted upon their memories, would serve as the foundation of a language, which they would afterwards increase and enlarge as new objects began to multiply, and hence give rise to new terms and definitions.

One of the first lessons taught to Adam by his infallible Director, would be the necessity of food for the support of his life. Accordingly Moses informs us, that for this purpose a grant was made him to eat of every tree of the garden, excepting one. At the same time it was made known to him, in what manner he was to repair the decays of nature, namely, by eating of *the tree of life*. Then, in order to qualify him for social intercourse, he was ordered to exercise his faculty of speech, by giving names to different creatures. The author of the book of Ecclesiasticus says of our first parents, "They received the use of the five operations of the Lord; and in the sixth, he imparted to them understanding; and in the seventh, speech to interpret the cogitations thereof." The meaning cannot be, that he gave them every word they were to pronounce, more than every idea which their senses were to convey to their understanding. Our talents, and the exercise of them, may be both said to be given us of God; but whatever capacities we receive from him, it is supposed that we ourselves must improve them, before we can attain to any acquirements whatever. Although Adam had heard and understood the words of God, yet Moses does not give the least hint that he ever attempted to speak before this time. For if he had, as some imagine, innate knowledge and proper terms for every thing presented to him, what

occasion was there to bring animals before him to see what names he would impose upon them? Some writers have endeavoured to turn into ridicule the whole of this transaction, and have asked, how could all creatures upon earth appear at one time before Adam? not only one, but many days would have elapsed before he could give each a name. But this objection arises from not understanding the words of Moses. What our translators render, to see what he would call *THEM*, is in the original, to see what name he would call *IT*. "And whatsoever Adam called *IT* (viz. the living creature), that was the name of *IT*." The meaning seems to be no more than this: God brought a few creatures to Adam, to make him try to name them; and whatever he called any of them, that continued to be its name. And no doubt he would denominate every animal before him, from its external appearance, from its size, its colour, or its voice: And in process of time, he would give names to all those creatures which Providence brought within his view, or with which he became afterwards acquainted.

The next thing in which God instructed Adam, though probably in a trance or vision, was his near relation to Eve, as being part of his own body. This piece of knowledge was imparted to him, in order to cement the greater love and affection between the two during the remaining period of their lives.

These, according to Moses, are all the transactions in which our first parents were interested during their abode in Paradise, till they lost their innocence, and forfeited the enjoyments of their happy situation. And nothing can be more evident, than that the instructions which they received, bespoke the infantile state of their minds; tho' there is no doubt but further and higher dispensations of knowledge would have been communicated to them, as they became able to bear them, and had their minds matured by experience and reflection.

How long our first parents retained their innocence, ³ How long we are no where told. Many assert that they fell on the very first day of their creation. But Moses mentions so many transactions on that day, as must have ingrossed the whole of their attention, and prevented them from falling into such temptations as arise from indolence and want of reflection. Besides, if, in such circumstances as they were placed, they could not refrain from an open violation of the Divine law for the space of one day, it would bespeak a deceitfulness of heart in them greater than in most of their posterity. It is somewhat singular, that many of the great trials recorded in sacred writing were limited to 40 days; which in prophetic style is sometimes equivalent to 40 years. This appears from the history of Moses, of Elijah, of Nineveh, and of the Jewish nation after the death of Christ. And, what is very remarkable, he, of whom Adam was a type, was tempted 40 days in the wilderness. Agreeable to this part of the Divine economy, perhaps the trial of our first parents lasted so long. However, that they remained for a considerable time in the garden, appears highly probable from this consideration, that their indulgent Creator, who had manifested his tender concern for them while innocent, and extended his mercy to them when fallen, would never have turned them out of paradise, and sent

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sent them into an uncultivated world, before they had acquired the arts of living, and were capable of providing against the vicissitudes of their future lot. The particulars of this memorable transaction are considered under the article FALL.

Moses gives us no further account of Adam's life after leaving the garden, but that he begat some children, and died at such an age. Yet we have no reason to doubt, but the venerable patriarch ever after led a life of penitence, and of the strictest piety. The various communications which he had enjoyed with his Maker in paradise, and which were probably renewed to him after his fall, could not fail to make the deepest impressions upon his mind. The gracious respite he had met with, from the execution of the sentence denounced against him, would make him cautious of offending for the time to come; lest the next violation of the Divine authority should put an end to his existence. The *cherubim and flaming sword*, or the devouring flame, on the *east of Eden* (which might continue burning all his life), would be to him what the vestiges of the ark were to Noah and his sons, an awful memorial of the danger of incurring the Divine displeasure. Besides, his worldly comforts being in a great measure withdrawn, his mind would be naturally dis-

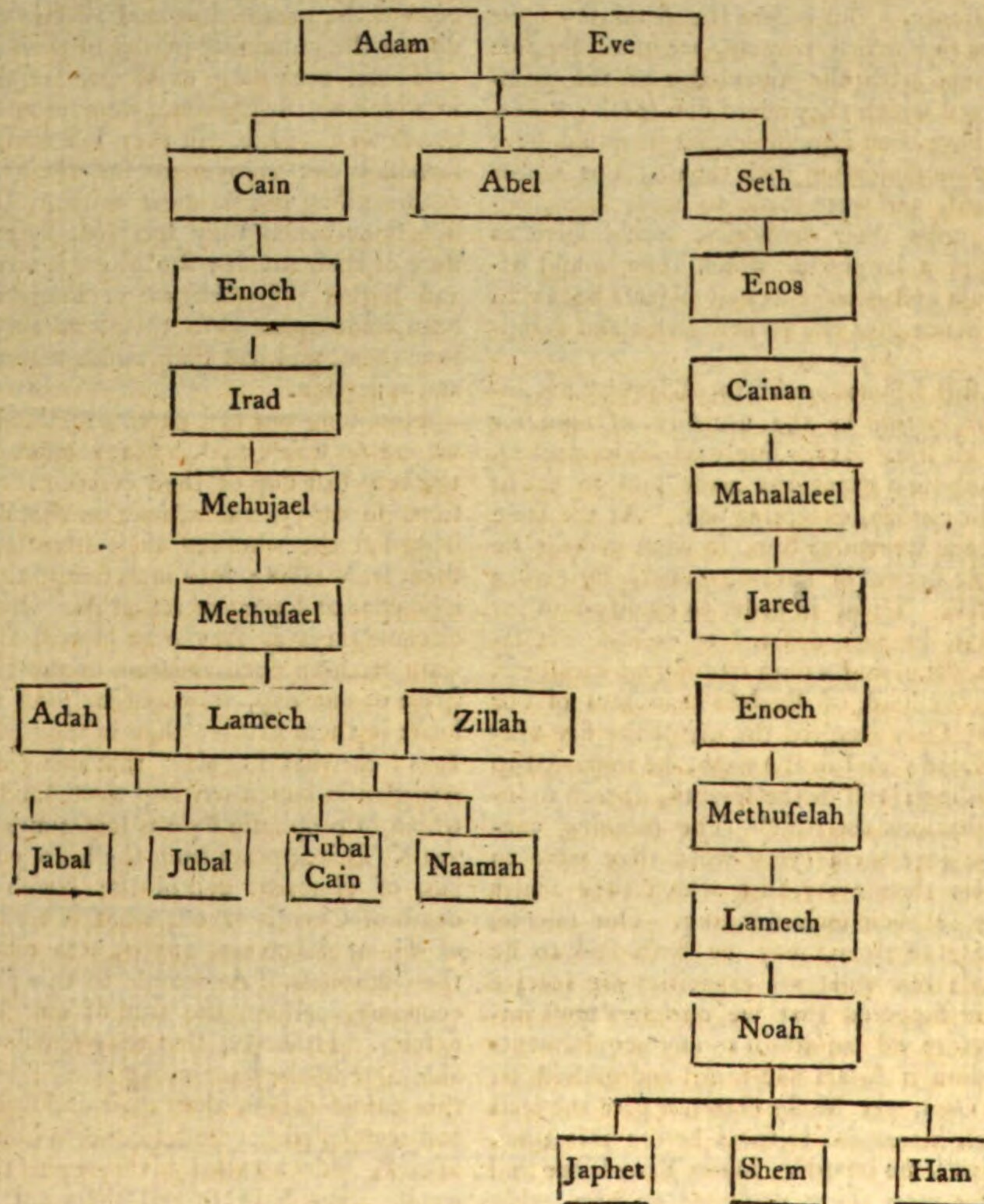
posed for relishing those pleasures which flow from piety and religion.

The first thing which we hear of Adam in his new situation was, that *he knew Eve his wife, and she conceived and bare Cain*. Afterwards, we are told, she bare Abel. When the brothers were grown up, they betook themselves to distinct employments; the former to husbandry, and the latter to the keeping of sheep. Their inward dispositions were still more different; Cain being wicked and avaricious, but Abel just and virtuous.

In process of time they brought their respective offerings to God; Cain of the fruits of the ground, and Abel of the firstlings of his flock: but they met with very different success; for God accepted the offering of Abel, but Cain's he did not accept; the consequences of which are related under the articles ABEL and CAIN.

Soon after the murder of Abel, his loss was made up to his parents in another son they had, whom Eve named *Seth*, that is, "appointed;" because he was appointed instead of Abel, whom Cain slew.

As the whole progeny of Adam, of whom we have any mention in Scripture, were the descendants of Cain and Seth, it may be proper to give the following genealogical table of the Antediluvians.



Antediluvians.

5
Of the line
of Cain.

The sacred historian, confining himself chiefly to the line of Seth, from whence Noah was descended, has acquainted us with very few particulars relating to that of Cain: nor can we thus form any conjectures how long he or any of his descendants lived. All we know is, that Lamech, the fifth in descent from him, married two wives, Adah and Zillah the first known instance of polygamy: that by the former he had two sons, Jabal, who was the first that dwelt in tents, and fed cattle; and Jubal, the inventor of music; and by the other, a son named Tubal-Cain, who found out the art of forging and working metals. Zillah likewise brought him a daughter named Naamah, supposed to have invented spinning and weaving: and we are told that, on some occasion or other, Lamech made a speech to his wives, the explication of which has greatly puzzled the interpreters. See LAMECH.

6
The line of
Seth.
Miln's Phy-
sico-Theolog.
Lectures,
p. 242, &c.

Moses proceeds to tell us, that Seth had a son born to him called Enos, and that *then began men to call upon the name of the Lord*. Commentators give us three different senses of these words. Some think the words should be rendered, *Then men prophaned in calling on the name of the Lord*; and that even Enos arrogated to himself a power, as if he had been a god. But this sense seems harsh and unnatural. There is nothing more unlikely, than that Adam's grandchildren, who lived under his own eye, would so soon shake off parental authority, and apostatise from the belief and worship of the one true God. Others think, that tho' men had hitherto worshipped God in private, yet they now instituted public assemblies, met in larger societies for solemn and social worship, and introduced liturgies and forms for more effectually paying their homage to the Almighty. This indeed is a very natural comment from those who place religion in modes and set forms of worship. But it is scarcely credible, that Adam and his family had never met together to worship God till now, when we are told that Cain and Abel, and probably both their families along with them, brought their offerings to the Lord; this they no doubt did every sabbath-day. Others, therefore, put a more consistent interpretation upon the words, namely, that *men now called themselves by the name of the Lord*. The meaning of which is, that about this period, the family of Seth, who adhered to God and his worship, began to give themselves a denomination, expressive of their relation and regards to him. They distinguished themselves from the irreligious family of Cain, and assumed the title of the *sons* or *children* of God: which designation was afterwards applied to them by Moses: it was even used after the flood, and adopted by the writers of the New Testament.

Of the three next descendants of Seth, Cainan, Mahalaleel, and Jared, and of Methuselah and Lamech, the grandfather and father of Noah, Moses has recorded no more than their several ages. The oriental authors commend them, as they do Seth and Enos, for their piety, and the salutary injunctions they left behind them, forbidding their children all intercourse with the race of cursed Cain.

Enoch, the son of Jared, and father of Methuselah, was a person of most extraordinary piety, *walking with God*, as the scripture expresses it, for at least the last three hundred years of his life; as a reward for

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which exemplary behaviour in so corrupt an age, he was taken up by God into heaven, without tasting death. See ENOCH.

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Moses afterwards informs us, *When men began to multiply*, i. e. when the earth was filled with inhabitants, and tribes formerly living remote began to approach nearer to one another, *Daughters were born unto them*; meaning in greater abundance than formerly: which seems to hint, that at this period there were considerably more females than males born into the world. Some think that Moses, being now about to mention the wickedness of the Antediluvians, introduces the posterity of Cain as being the chief cause of their corruption; and that he styles them *men* and *daughters of men*, because they were sensual and earthly; in which sense the word *men* is sometimes used in the scriptures.

7
Corruption
of the hu-
man race.

The sons of God saw the daughters of men that they were fair; and they took them wives of all that they chose. These words have given rise to many absurd and ridiculous comments both of Jews and Christians. There are two meanings affixed to them, which may be mentioned as the most probable. Whenever the name of God is added to any thing, it not only denotes God's being the efficient cause, but it heightens and increases its usual meaning. For which reason any thing that is excellent in its kind, or uncommonly lofty and magnificent, was by the Jews said to be of God, or of the Lord. Thus the angels are called the *sons of God*. And Adam being created with a nobler image than any other creature, is said to be made in the *image of God*. The cedars of Lebanon are called the *cedars of the Lord*; and great mountains, the *mountains of God*. Therefore by the *sons of God* in this place are meant men of great opulence, power, and authority. And by way of contrast, the historian introduces those of poor and mean circumstances in life, and calls them the *daughters of men*. The words thus explained, are not an unlikely description of that dissolute age. The great and mighty in this world are commonly most addicted to sensual gratifications, because they have so many incentives to inflame their passions, and so few restraints to curb them; and, instead of using their power to punish and discountenance vice, are too often the greatest examples and promoters of lasciviousness and debauchery. Thus, these *sons of God*, these great men, when they happened to meet with the daughters of their inferiors, gazed upon them as fit objects to gratify their lust; and from among these they took to themselves, in a forcible manner, *wives*, or (as it may be rendered) *concubines*, of all that they chose, whether married or unmarried, without ever asking their consent. No wonder, then, that the earth should be filled with violence, when the highest rank of men were above the restraint of law, of reason, and religion, and not only oppressed the poor, but with impunity treated them and their children in such a base and cruel manner.

But there are other writers who cannot relish the above opinion; because they think it a harsh and unnatural construction, to call great and powerful persons the *sons of God*, and all mean and plebeian women the *daughters of men*. Besides, the text does not say, that the *sons of God* offered any violence to these inferior

I

women;

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Mila, p. 265.

women; but that they saw that they were fair, and made choice of them for wives. And wherein is the heinousness of the offence, if men of a superior rank marry their inferiors, especially when an excess of beauty apologises for their choice? Or why should a few unequal matches be reckoned among the causes of bringing upon the world an universal destruction? For these reasons many are of opinion, that the descendants of Seth, who were styled the *sons of God* on account of their near relation to him, saw the *daughters of men*, i. e. the impious progeny of Cain, and by intermarriages became associated with them; and surrendering to those inchantresses their hearts and their freedom, they surrendered at the same time their virtue and their religion. From this union proceeded effects similar to what has happened ever since. When a pure society mixes with a profane, the better principles of the one become soon tainted by the evil practices of the other; which verifies the old adage, *Evil communication corrupts good manners*. Thus it appears, that the great source of universal degeneracy, was owing to the posterity of Seth mingling with the progeny of Cain, in opposition to what their pious fathers had strictly charged them.

It is afterwards said, *There were giants in the earth in those days: and also after that, when the sons of God came in unto the daughters of men, and they bare children to them, the same became mighty men, which were of old men of renown*. Translators are not agreed about the meaning of the word *giants*. Some render the word, *violent and cruel men*; others, *men who fall upon and rush forward*, as a robber does upon his prey: the meaning then is, that they were not more remarkable for their strength and stature, than for their violence and cruelty. It is generally agreed, that in the first ages of the world, men were of a gigantic stature; though Moses does not mention them as giants till after the union of the families of Seth and Cain, when men used their superiority in bodily strength for the purposes of gratifying their unhallowed passions.

At this period of the world, and long after, political power and bodily strength went hand in hand together. Whoever was able to encounter and kill a fierce and dangerous wild beast, and clear the country of noxious animals, or who was able in the day of battle to destroy most of his enemies, was looked up to by the rest of his companions as the fittest to be their leader and commander. Thus, Nimrod, from being a *mighty hunter*, became a great king, and, grasping at power, was never satisfied till every obstacle to his ambition was removed. And it appears from history, that all his successors have pretty nearly trodden in the same path. These *giants* then, or *sons of God*, might be the chief warriors, who formed themselves into chosen bands, and living among a cowardly and effeminate people, had no curb to their cruelty and lust. From them might spring an illegitimate race, resembling their fathers in body and mind, who, when they grew up, having no inheritance, would be turned loose upon the world, and follow no other employment but theft, rapine, and plunder. Thus they became *mighty men and men of renown*, and procured themselves a name: but this was owing to the mischief they did, and the feats of savage cruelty which they performed.

8
God's forbearance.

Mankind running thus headlong into all manner of vice, were admonished to repent; and God, out of his

great mercy, was pleased to grant them a convenient time for that purpose; no less than 120 years, during which space, but no longer, he declared his Spirit should "strive with man," or endeavour to awaken and reclaim them from their wicked course of life.

Amidst this general corruption, one man, however, was found to be just and perfect in his generation, walking with God. This extraordinary person was Noah, the son of Lamech; who, not thinking it sufficient to be righteous himself, unless he did his utmost to turn others likewise to righteousness by admonition as well as example, became a preacher to the abandoned race among which he lived, employing both his counsel and authority to bring them to a reformation of their manners, and to restore the true religion among them. But all he could do was to no purpose; for they continued incorrigibly obstinate: so that at length (as Josephus tells us), finding himself and family in imminent danger of some violence in return for his good will, he departed from among them, with his wife and children.

On his departure, it is probable they fell into greater disorders than before; having now none to control, or even to trouble, them with unwelcome advice. Moses assures us, "that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was continually evil;" and that "the earth was corrupt and filled with violence, all flesh having corrupted his way upon the earth." These words leave no room to inquire into the particular crimes of the Antediluvian world, which seems to have been overrun with a complication of all manner of debauchery and wickedness, and above all with violence and injustice towards one another.

Things being in this state, God, as the sacred historian pathetically expresses it, "repented that he had made man on earth, and it grieved him at his heart." And the time of forbearance being elapsed, he passed the sentence of their utter destruction by a flood of waters; a sentence which likewise included the beasts of the earth, and every creeping thing, and the fowls of the air. But "Noah found grace in the eyes of the Lord;" who had before acquainted him with his design of bringing a deluge on the earth, and directed him to make an ark, or vessel, of a certain form and size, capable of containing not only himself and family, but such numbers of animals of all sorts as would be sufficient to preserve the several species, and again replenish the earth, together with all necessary provisions for them. All these injunctions Noah performed; and, by God's peculiar favour and providence, he and those that were with him survived this tremendous calamity. See the article DELUGE.

As to any further transactions before the flood, we are left entirely in the dark by the sacred historian. The Jews and eastern nations, however, have made ample amends for the silence of Moses, by the abundance of their traditions. The only part of these, which can be connected in any thing like history, is what follows.——After the death of Adam, Seth, with his family, separated themselves from the profligate race of Cain, and chose for their habitation the mountain where Adam was buried, the Cainites remaining below, in the plain where Abel was killed; and, according to our historians, this mountain was so high, that

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9
Preaching of Noah.10
Mankind incorrigible.11
The whole world destroyed by a flood except Noah and his family.12
Traditional history of the Antediluvians.

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that the inhabitants could hear the angels singing the praises of God, and even join them in that service. Here they lived in great purity and sanctity of manners. Their constant employment was praising God, from which they had few or no avocations; for their only food was the fruits of the trees which grew on the mountain, so that they had no occasion to undergo any servile labours, nor the trouble of sowing and gathering in their harvest. They were utter strangers to envy, injustice, or deceit. Their only oath was, "By the blood of Abel;" and they every day went up to the top of the mountain to worship God, and to visit the body of Adam, as a mean of procuring the Divine blessing. Here, by contemplation of the heavenly bodies, they laid the foundations of the science of astronomy; and, lest their inventions should be forgotten, or lost before they were publicly known, understanding, from a prediction of Adam's, that there would be a general destruction of all things, once by fire, and once by water, they built two pillars, one of brick, and the other of stone, that if the brick one happened to be overthrown by the flood or otherwise destroyed, that of stone might remain. This last, Josephus says, was to be seen in his time in the land of Syriac, (thought to be in Upper Egypt).

The descendants of Seth continued in the practice of virtue till the 40th year of Jared, when an hundred of them hearing the noise of the music and the riotous mirth of the Cainites, agreed to go down to them from the holy mountain. On their arrival in the plain, they were immediately captivated by the beauty of the women: who were naked, and with whom they defiled themselves; and this is what is meant by the intermarriage of the sons of God with the daughters of men, mentioned by Moses. The example of these apostate sons of Seth was soon followed by others; and from time to time great numbers continued to descend from the mountain, who in like manner took wives from the abandoned race of Cain. From these marriages sprung the giants (who, however, according to Moses, existed before); and, these being as remarkable for their impiety as for their strength of body, tyrannized in a cruel manner, and polluted the earth with wickedness of every kind. This defection became at last so universal, that none were left in the holy mountain, except Noah, his wife, his three sons and their wives.

13
Profane history. Berossus's Babylonian Antiquities.

Berosus, a Chaldean historian, who flourished in the time of Alexander the Great, enumerates ten kings who reigned in Chaldea before the flood; of whom the first, called *Alorus*, is supposed to be Adam, and Xisuthrus, the last, to be Noah.—This *Alorus* declared that he held his kingdom by divine right, and that God himself had appointed him to be the pastor of the people. According to our historian, in the first year of the world, there appeared out of the Red Sea, at a place near the confines of Babylon, a certain irrational animal called *Oannes*. He had his whole body like that of a fish; but beneath his fish's head grew another of a different sort (probably a human one). He had also feet like a man, which proceeded from his fish's tail, and a human voice, the picture of him being preserved ever after. This animal conversed with mankind in the day-time, without eating any thing: he delivered to them the knowledge of letters, sciences,

and various arts: he taught them to dwell together in cities, to erect temples, to introduce laws, and instructed them in geometry: he likewise showed them how to gather seeds and fruits, and imparted to them whatever was necessary and convenient for a civilized life; but after this time there was nothing excellent invented. When the sun set, *Oannes* retired into the sea, and continued there all night. He not only delivered his instructions by word of mouth, but, as our author assures us, wrote of the origin of things, and of political economy. This, or a similar animal, is also mentioned by other authors.

Of *Alasporus*, the second king, nothing remarkable is related. His successor, *Amelon*, or *Amillarus*, was of a city called *Pantabibla*. In his time another animal resembling the former appeared, 260 years after the beginning of this monarchy. *Amelon* was succeeded by *Metalarus*; and he by *Daonus*, all of whom were of the same city. In the time of the latter, four animals of a double form, half man and half fish, made their appearance. Their names were, *Euedocus*, *Eneugamus*, *Encubulus*, and *Anementus*. Under the next prince, who was likewise of *Pantabibla*, appeared another animal of the same kind, whose name was *Odacon*. All these explained more particularly what had been concisely delivered by *Oannes*.

In the reign of the tenth king, *Xisuthrus*, happened the great deluge, of which our author gives the following account: *Cronus*, or *Saturn*, appeared to *Xisuthrus* in a dream, and warned him, that on the fifteenth of the month *Dæsius* mankind would be destroyed by a flood; and therefore commanded him to write down the original, intermediate state, and end of all things, and bury the writings under ground in *Sippara*, the city of the sun; that he should also build a ship, and go into it with his relations and dearest friends, having first furnished it with provisions, and taken into it fowls and four-footed beasts; and that, when he had provided every thing, and was asked whether he was sailing, he should answer, *To the gods, to pray for happiness to mankind*. *Xisuthrus* did not disobey; but built a vessel, whose length was five furlongs, and breadth two furlongs. He put on board all he was directed; and went into it with his wife, children, and friends. The flood being come, and soon ceasing, *Xisuthrus* let out certain birds, which finding no food, nor place to rest upon, returned again to the ship. *Xisuthrus*, after some days, let out the birds again; but they returned to the ship, having their feet daubed with mud: but when they were let go the third time, they came no more to the ship, whereby *Xisuthrus* understood that the earth appeared again; and thereupon he made an opening between the planks of the ship, and seeing that it rested on a certain mountain, he came out with his wife, and his daughter, and his pilot: and having worshipped the earth, and raised an altar, and sacrificed to the gods, he and those who went out with him disappeared. They who were left behind in the ship, finding that *Xisuthrus* and the persons that accompanied him did not return, went out themselves to seek for him, calling him aloud by his name; but *Xisuthrus* was no more seen by them: only a voice came out of the air, which enjoined them, as their duty was, to be religious; and informed them, that on account of his own piety he was gone to dwell with the gods, and that

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that his wife and daughter and pilot, were partakers of the same honour. It also directed them to return to Babylon, and that, as the fates had ordained, they should take the writings from Sippara, and communicate them to mankind; and told them, that the place where they were was the country of Armenia. When they had heard this, they offered sacrifice to the gods, and unanimously went to Babylon; and when they came thither, they dug up the writings at Sippara, built many cities, raised temples, and rebuilt Babylon.

14
Antediluvian kings of Egypt.

The Egyptians, who would give place to no nation, in point of antiquity, have also a series of kings, who, as is pretended, reigned in Egypt before the flood; and, to be even with the Chaldeans, began their account the very same year that theirs does according to Berosus.

There was an ancient chronicle extant among the Egyptians, not many centuries ago, which contained 30 dynasties of princes who ruled in that country, by a series of 113 generations, through an immense space of 36,525 years, during which Egypt was successively governed by three different races; of whom the first were the Auritæ, the second the Mestæi, and the third the Egyptians.

But this extravagant number of years Manetho (to whose remains we must chiefly have recourse for the ancient Egyptian history) has not adopted, however in other respects he is supposed to have been led into errors in chronology by this old chronicle, which yet seems to have been a composition since Manetho's time.

15
Sanchoniatho's Phœnician history.

The account given by Berosus is manifestly taken from the writings of Moses; but we have another account of the first ages of mankind, in which no mention is made of the flood at all. This is contained in some fragments of a Phœnician author called *Sanchoniatho*, who is by some said to have been cotemporary with Gideon, by others to have lived in the days of king David; while some boldly assert there never was such a person, and that the whole is a fiction of Philo-Biblius, in opposition to the books of Josephus, written against Apion. To gratify the reader's curiosity, however, we have subjoined an account of the first ten generations mentioned by him, which are supposed by the compilers of the Universal History to correspond to the generations mentioned by Moses before the flood.

Sanchoniatho having delivered his cosmogony, or generation of the other parts of the world, begins his history of mankind with the production of the first pair of mortals, whom Philo, his translator, calls *Protogonus* and *Æon*; the latter of whom found out the food which was gathered from trees.

Their issue were called *Genus* and *Genea*, and dwelt in Phœnicia: but when the great droughts came, they stretched forth their hands to heaven towards the sun; for him they thought the only God and Lord of heaven, calling him *Beelsamen*, which in Phœnician is *Lord of heaven*, and in Greek *Zeus*.

Afterwards from *Genus*, the son of *Protogonus* and *Æon*, other mortal issue was begotten, whose names were *Phos*, *Pur*, and *Phlox*; that is, *Light*, *Fire*, and *Flame*. These found out the way of generating fire, by the rubbing of pieces of wood against each other, and taught men the use thereof. They begat sons of vast bulk and height, whose names were given to the

mountains on which they seized: so from them were named mount *Cassius*, *Libanus*, *Antilibanus*, and *Brathys*.

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Of these last were begotten *Memrumus*, and *Hypsuranius*; but they were so named by their mothers, the women of those times, who without shame lay with any man they could light upon. *Hypsuranius* inhabited Tyre, and he invented the making of huts of reeds and rushes and the papyrus. He also fell into enmity with his brother *Ufous*, who first invented a covering for his body out of the skins of the wild beasts which he could catch. And when violent tempests of winds and rains came, the boughs in Tyre, being rubbed against each other, took fire, and burnt the wood there. And *Ufous*, having taken a tree, and broke off its boughs, was so bold as to venture upon it into the sea. He also consecrated two rude stones, or pillars, to fire and wind; and he worshipped them, and poured out to them the blood of such wild beasts as had been caught in hunting. But when these were dead, those that remained consecrated to them stumps of wood and pillars, worshipping them, and kept anniversary feasts unto them.

Many years after this generation came *Agreus* and *Halicus*, the inventors of the arts of hunting and fishing, from whom huntsmen and fishermen are named.

Of these were begotten two brothers, the inventors of iron and of the forging thereof: one of these, called *Chrysor*, the same with *Hephestus*, or *Vulcan*, exercised himself in words and charms and divinations; found out the hook, bait, and fishing-line, and boats slightly built; and was the first of all men that sailed. Wherefore he also was worshipped after his death for a god: and they called him *Zeus Michius*, or *Jupiter the engineer*; and some say his brothers invented the way of making walls of brick.

Afterwards from this generation came two brothers; one of whom was called *Technites*, or the *Artist*; the other, *Gienus Autochthon*, [the home-born man of the earth.] These found out to mingle stubble, or small twigs, with the brick earth, and to dry them in the sun, and so made tiling.

By these were begotten others; of which one was called *Agrus* [Field]; and the other *Agrouerus*, or *Agrotas* [Husbandmen], who had a statue much worshipped, and a temple carried about by one or more yoke of oxen, in Phœnicia, and among those of Byblus he is eminently called the *greatest of the gods*. These found out how to make courts about mens houses, and fences and caves, or cellars. Husbandmen, and such as use dogs in hunting, derive from these; and they are also called *Aletæ* and *Titans*.

Of these were begotten *Amynus* and *Magus*, who showed men to constitute villages and flocks.

In these mens age there was one *Eliun*, which imports in Greek *Hypsisthus* [the most high], and his wife was named *Beruth*, who dwelt about Byblus: and by him was begot one *Epigerus*, or *Autochthon*, whom they afterwards called *Uranus* [heaven]; so that from him that element which is over us, by reason of its excellent beauty, is called *heaven*: and he had a sister of the same parents called *Ge* [the earth]; and by reason of her beauty the earth had her name given to it.

Hypsisthus, the father of these, dying in fight with wild beasts, was consecrated, and his children offered sacrifices and libations to him.—But *Uranus* taking the kingdom

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kingdom of his father, married his sister Ge, and had by her four sons; Ilus, who is called *Cronus*, [or Saturn]; Betylus; Dagon, who is Siton, or the god of corn; and Atlas: but by other wives Uranus had much issue.

As to the customs, policy, and other general circumstances of the Antediluvians, we can only form conjectures.

The only thing we know as to their religious rites is, that they offered sacrifices, and that very early, both of the fruits of the earth, and of animals; but whether the blood and flesh of the animals, or only their milk and wool, were offered, is a disputed point.—

16
Arts, &c. of the Antediluvians.

Of their arts and sciences, we have not much more to say. The Antediluvians seem to have spent their time rather in luxury and wantonness, to which the abundant fertility of the first earth invited them, than in discoveries or improvements, which probably they stood much less in need of than their successors. The art of working metals was found out by the last generation of Cain's line; and music, which they might be supposed to practise for their pleasure, was not brought to any perfection, if invented, before the same generation. Some authors have supposed astronomy to have been cultivated by the Antediluvians, though this is probably owing to a mistake of Josephus: but it is to be presumed, the progress they made therein, or in any other science, was not extraordinary; it being even very doubtful whether letters were so much as known before the flood. See ALPHABET, n° 13.

As to their politics and civil constitutions, we have not so much as any circumstances whereon to build conjecture. It is probable, the patriarchal form of government, which certainly was the first, was set aside when tyranny and oppression began to take place, and much sooner among the race of Cain than that of Seth. It seems also, that their communities were but few, and consisted of vastly larger numbers of people than any formed since the flood; or rather, it is a question, whether, after the union of the two great families of Seth and Cain, there were any distinction of civil societies, or diversity of regular governments, at all. It is more likely, that all mankind then made but one great nation, though living in a kind of anarchy, divided into several disorderly associations; which, as it was almost the natural consequence of their having, in all probability, but one common language, so it was a circumstance which greatly contributed to that general corruption which otherwise perhaps could not have so universally overspread the Antediluvian world. And for this reason chiefly, as it seems, so soon as the posterity of Noah were sufficiently increased, a plurality of tongues was miraculously introduced, in order to divide them into distinct societies, and thereby prevent any such total depravation for the future. See *CONFUSION of Tongues*.

* P. 282, 283.

Of the condition of the Antediluvians, Mr Whitehurst, in his *Inquiry into the original state and formation of the earth**, has given us the following picture: "Under a mild and serene sky, and when the spontaneous productions of the earth were more than sufficient for the calls of nature, without art or labour, mankind had no need of any other protection from the inclemency of the seasons, nor of barns for winter's store, than the benevolent Author of nature had plentifully provided for them. Consequently, in a state of nature like this, there was no temptation to acts of violence, in-

justice, fraud, &c. every one having plenty and enough, each equally partook of the numerous blessings thus amply provided for him. Power and property being equally diffused, men lived together in perfect peace and harmony, without law, and without fear; therefore it may be truly said of the Antediluvians, that they slept away their time in sweet repose on the ever-verdant turf. Such apparently was the state of nature in the first ages of the world, or from the creation to the first convulsion in nature, whereby the world was not only universally deluged, but reduced to a heap of ruins." But our ingenious author, whose *Inquiry* is not professedly repugnant to revelation, seems here to have lost himself in a pleasing reverie. At least he has forgot to inform us, For what purpose, under such circumstances, he supposes the deluge to have been sent upon the earth; and, How we are to understand the account given by Moses, who represents the Antediluvians, not as an innocent race, quietly reposing on the ever-verdant turf, but as a corrupt generation, by whom "the earth was filled with violence."

One of the most extraordinary circumstances which occurs in the Antediluvian history, is the vast length of human lives in those first ages, in comparison with our own. Few persons now arrive to eighty or an hundred years; whereas, before the flood, they frequently lived to near a thousand: a disproportion almost incredible, though supported by the joint testimonies of sacred and prophane writers. Some, to reconcile the matter with probability, have imagined that the ages of those first men might possibly be computed, not by solar years, but months; an expedient which reduces the length of their lives rather to a shorter period than our own. But for this there is not the least foundation; besides the many absurdities that would thence follow, such as their begetting children at about six years of age, as some of them in that case must have done, and the contraction of the whole interval between the creation and the deluge to considerably less than two hundred years, even according to the larger computation of the Septuagint.

Again: Josephus, the Jewish historian, and some Christian divines, are of opinion, that before the flood, and some time after, mankind in general did not live to such a remarkable age, but only a few beloved of God, such as the patriarchs mentioned by Moses. They reason in this manner: Though the historian records the names of some men whose longevity was singular, yet that is no proof that the rest of mankind attained to the same period of life, more than that every man was then of a gigantic stature, because he says, *in those days there were giants upon the earth*. Besides, had the whole of the Antediluvians lived so very long, and increased in numbers in proportion to their age, before the flood of Noah, the earth could not have contained its inhabitants, even supposing no part of it had been sea. And had animals lived as long, and multiplied in the same manner as they have done afterwards, they would have consumed the whole produce of the globe, and the stronger would have extinguished many species of the weaker. Hence they conclude, that, for wise and good ends, God extended only the lives of the patriarchs, and a few beside, to such an extraordinary length.

But most writers maintain the longevity of mankind in general in the early world, not only upon the authority

Antediluvians.

17
Of the longevity of the Antediluvians.

Antediluvians. authority of sacred, but likewise of profane history. And for such a constitution, the moral reasons are abundantly obvious. When the earth was wholly unpeopled, except by one pair, it was necessary to endow men with a stronger frame, and to allow them a longer continuance upon earth for peopling it with inhabitants. In the infant state of every mechanical art, relating to tillage, building, clothing, &c. it would require many years experience to invent proper tools and instruments to ease men of their labour, and by multiplied essays and experiments to bring their inventions to any degree of maturity and perfection. Every part of their work must have been exceedingly arduous from such a penury and coarseness of tools, and must have required longer time and more strength of body than afterwards, when mechanical knowledge was introduced into the world. If parents at this period had not continued long with their children, to have taught them the arts of providing for themselves, and have defended them from the attacks of wild beasts, and from other injuries to which they were exposed, many families would have been totally extinguished. But one of the best and most valuable ends which longevity would answer was, the transmitting of knowledge, particularly of religious knowledge, to mankind. And thus, before writing was invented, or any such easy and durable mode of conveyance was found out, a very few men served for many generations to instruct their posterity, who would not be at a loss to consult living and authentic records.

19
Natural
causes of it.

The natural causes of this longevity are variously assigned. Some have imputed it to the sobriety of the Antediluvians, and the simplicity of their diet; alleging that they had none of those provocations to gluttony, which wit and vice have since invented. Temperance might undoubtedly have some effect, but not possibly to such a degree. There have been many temperate and abstemious persons in later ages, who yet seldom have exceeded the usual period.—Others have thought that the long lives of those inhabitants of the old world proceeded from the strength of their stamina, or first principles of their bodily constitutions: which might, indeed, be a concurrent, but not the sole and adequate cause of their longevity; for Shem, who was born before the deluge, and had all the virtue of the antediluvian constitution, fell three hundred years short of the age of his forefathers, because the greatest part of his life was passed after the flood.—Others have imputed the longevity of the Antediluvians to the excellency of their fruits, and some peculiar virtue in the herbs and plants of those days. But to this supposition it has been objected, that as the earth was cursed immediately after the fall, its productions we may suppose gradually decreased in their virtue and goodness till the flood; and yet we do not see the length of mens lives decreased considerably, if at all, during that interval. Waving this objection, as the import of the curse is variously interpreted, it appears certain that the productions of the earth were at first, and probably continued till after the deluge, of a different nature from what they were in future times. Buffon supposes this difference may have continued gradually to diminish for many ages subsequent to that catastrophe. The surface of the globe (according to his theory) was in the first ages of the world less solid and compact; because, gravity

Antediluvians. having acted only for a short time, terrestrial bodies had not acquired their present density and consistence. The produce of the earth, therefore, must have been analagous to its condition. The surface being more loose and moist, its productions would of course be more ductile and capable of extension: Their growth, therefore, and even that of the human body, would require a longer time of being completed. The softness and ductility of the bones, muscles, &c. would probably remain for a longer period, because every species of food was more soft and succulent. Hence the full expansion of the human body, or when it was capable of generating, must have required 120 or 130 years; and the duration of life would be in proportion to the time of growth, as is uniformly the case at present: For if we suppose the age of puberty, among the first races of men, to have been 130 years, as they now arrive at that age in 14 years, the age of the Antediluvians will be in exact proportion to that of the present race; since by multiplying these two numbers by seven, for example, the age of the present race will be 90, and that of the Antediluvians will be 910. The period of man's existence, therefore, may have gradually diminished in proportion as the surface of the earth acquired more solidity by the constant action of gravity: and it is probable, that the period from the creation, to the days of David, was sufficient to give the earth all the density it was capable of receiving from the influence of gravitation; and consequently that the surface of the earth has every since remained in the same state, and that the terms of growth in the productions of the earth, as well as the duration of life, have been invariably fixed from that period.

It has been further supposed, that a principal cause of the longevity under consideration was the wholesome constitution of the Antediluvian air, which, after the deluge, became corrupted and unwholesome, breaking, by degrees, the pristine crasis of the body, and shortening mens lives, in a very few ages, to near the present standard.

The temperature of the air and seasons before that catastrophe are upon very probable grounds supposed to have been constantly uniform and mild: the burning heats of summer and the severities of winter's cold were not then come forth, but spring and autumn reigned perpetually together: And indeed, the circumstance above all others most conducive to the prolongation of human life in the postdiluvian world appears to be an equal and benign temperature of climate (see the article LONGEVITY); whence it seems reasonable to infer, that the same cause might have produced the same effect in the Antediluvian world.

20
Whether
flesh was permitted to be eaten before the deluge, is a question which has been much debated. By the permission expressly given to Noah, for that purpose, after the flood, and God's assigning vegetables only for food to man, as well as beast, at the creation, one would imagine it was not lawful before: yet others have supposed, that it was included in the general grant of power and dominion given to Adam by God over the animal creation; and the distinction of beasts into clean and unclean, which was well known before the flood, is insisted on as a strong argument on this side.

But in answer to this it has been observed, that if

Antediluvians

so, it doth not appear what occasion there was to renew this grant after the flood, and to add, "Every moving thing that liveth shall be meat for you, even as the green herb have I given you all things." This surely implies that the green herb and fruits of the trees were all that was granted to man at first; but now, over and above that, was added the grant of animal food: for in a deed or gift, all is specified that is given or granted, and whatever is not expressly mentioned is excluded or not given. Here man's food is appointed and specified; what is not expressly mentioned is therefore reserved and not granted. Besides, this grant or appointment of man's food respected, not Adam only, but all his posterity, till an additional grant was made.

To the animals no further grant was made than at first; but to man another was made immediately after his fall and expulsion from Paradise, implied in these words: "In the sweat of thy face shalt thou eat bread, till thou return unto the ground." This was in truth a punishment for his transgression, as well as a grant of other food, but yet what was now become necessary to him. Paradise was no doubt planted with the most excellent fruits, sufficient to have sustained his life in health and vigour in his innocent state: but after his transgression, being thrust out from that happy abode, and having then only the fruits of the common earth to feed on, which were not so nutritious as those of Paradise, he stood in need of something else to sustain life; and therefore bread, produced by culture and other preparations for his food was now added, which before was not necessary, and thence called the *staff of life*. This seems a plain reason why bread was added after he came to live on the common earth; though perhaps another reason also for that addition may be given from the change that happened in man's body after his fall. Bread being now become the staff of life, Cain, the first man born, became a tiller of the ground, or an husbandman; as the next in birth, Abel, became a keeper or feeder of sheep.

As to the distinction between clean and unclean, this solely respected animals offered in sacrifice in the Antediluvian world: as is evident from hence, that Noah, upon his coming out of the ark "took of every clean beast and of every clean fowl, and offered burnt-offerings unto the Lord;" and that upon the grant of animal food to him and his posterity, which was posterior in time to the sacrifice, there is not the least mention of any distinction between clean and unclean with respect to food, but the very contrary, since the grant runneth, "Every moving thing that liveth shall be meat for you, even as the green herb have I given you all things." That distinction of clean and unclean as to food, came in with the law of Moses, and was different from that of sacrifices, there being several creatures clean for food which were not to be offered in sacrifice.

But another objection here occurs. What occasion was there for keeping sheep, when none of them could be eaten? In answer to this, it has been observed, that sheep and other animals might at this period be of great use to men besides yielding them food. Their flocks, no doubt, consisted of such creatures as were of the domestic kind, and such as by the divine law were pronounced clean and fit for being offer-

ed in sacrifice; therefore numbers would be kept for this very purpose. Their skins, besides serving men as garments, might answer many other valuable intentions. Vestments of hair and wool soon succeeded the ruder coverings of skins; consequently great profit would be derived from such animals as could be shorn, especially in countries where the inhabitants led a pastoral life and dwelt in tents. And we afterwards find that Abel's sacrifice was of this kind. They might use several of these animals, as they still do in some parts of the world, for bearing of burdens and drawing of carriages: for we may take it for granted that the first inventions for easing men of labour, would be of the simplest kind, and such as came easiest to hand. But keeping flocks of sheep, goats, and such like, would be of great utility, by affording quantities of milk, which is found to be the most nourishing diet both to the young and the old; and their carcases, though not used as food, might answer some useful purposes, perhaps in manuring the soil.

The Antediluvian world was, in all probability, stocked with a much greater number of inhabitants than the present earth either actually does, or perhaps is capable of containing or supplying. This seems naturally to follow from the great length of their lives, which exceeding the present standard of life in the proportion, at least, of ten to one, the Antediluvians must accordingly in any long space of time double themselves, at least in about the tenth part of the time in which mankind do now double themselves. It has been supposed that they began to beget children as early, and left off as late, in proportion, as men do now; and that the several children of the same father succeeded as quickly one after another as they usually do at this day; and as many generations, which are but successive with us, were contemporary before the flood, the number of people living on the earth at once would be by that means sufficiently increased to answer any defect which might arise from other circumstances not considered. So that, if we make a computation on these principles, we shall find, that there was a considerable number of people in the world at the death of Abel, though their father Adam was not then 130 years old; and that the number of mankind before the deluge would easily amount to above one hundred thousand millions (even according to the Samaritan chronology), that is, to twenty times as many as our present earth has, in all probability, now upon it, or can well be supposed capable of maintaining in its present constitution.

The following table, made upon the above mentioned principles by Mr Whiston, shows at least what number of people might have been in the Antediluvian world.

Number of mankind.	Year of the world.	Year of doubling.	Series.
4	2	2	1
8	6	4	2
16	12	6	3
32	20	8	4
64	30	10	5
128	42	12	6
256	56	14	7

Antediluvians

21
Increase of mankind before the flood.

Antediluvians.

A N T

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A N T

Antediluvians.

Number of mankind.	Year of the world.	Year of doubling.	Series.
512	72	16	8
1024	90	18	9
2048	110	20	10
4096	132	22	11
8192	156	24	12
16,384	182	26	13
32,768	210	28	14
65,536	240	30	15
131,072	272	32	16
262,144	306	34	17
524,288	342	36	18
1,048,576	380	38	19
2,097,152	420	40	20
4,194,304	462	42	21
8,388,608	506	44	22
16,777,216	552	46	23
33,554,432	600	48	24
67,108,864	650	50	25
134,217,728	702	52	26
268,435,456	756	54	27
536,870,912	812	56	28
1,073,741,824	870	58	29
2,147,483,648	930	60	30
4,294,967,296	992	62	31
8,589,934,592	1056	64	32
17,179,869,184	1122	66	33
34,359,738,368	1190	68	34
68,719,476,736	1260	70	35
137,438,953,472	1332	72	36
274,877,906,944	1406	74	37
549,755,813,888	1482	76	38

such a number, upon the whole, as might be thought sufficient to people the earth.

3. In that calculation the two material points, the time of nursing and the age of puberty, are quite overlooked, by which all computations of the numbers in the Antediluvian world must be regulated. What unavoidable mistakes this omission must occasion, will be seen by examining the first ten numbers of the said table.

Years of the world and intervals of doubling.	Number of increase according to the intervals.	
1	2	Adam and Eve
2	4	Cain and Abel
6	8	
12	16	
20	32	
30	64	
42	128	
56	256	
72	512	
90	1024	
110	2048	

On this table it may be observed, 1. That though there were but two persons created at first, this computation makes four persons in the second year of the world. This could not possibly be, except Cain had been born within 12 months after the creation, which is highly improbable, and Abel in the second year, yet far more improbable; for in that case Eve could not have suckled Cain.

2. In the sixth year of the world we have eight persons, that is, six children of Eve's in six years. "But Cockburn, (our author adds) what shall Eve do with six infants P. 108. in six years? Where could she find so many wet nurses for them? Or would the mother of all living deny her children that nourishment which the Creator had appointed for their first food, the milk in her breasts? Do they consider that there was but one woman in the world to do for herself, her husband, and her children, what belongs to women to do? We should surely have more respect and compassion for the mother of all mankind, than to lay such an intolerable burden upon her, whose sorrow for her own deception, and thereby ruining both herself and her husband, must have been very great for many years. In punishment of which, though God had said *he would greatly multiply her sorrow and conception*, the meaning was not, that she should have a child every year, which could not be, because the nature of that food and nourishment appointed by himself for her children would not permit it. Nor yet when he commanded them to *increase and multiply and replenish the earth*, could the command be obeyed in such a manner as was contrary to the order of nature and providence. But the method intended to answer the design of the command was to prolong their lives to above 800 and 900 years, and their prolific powers for 340 or 360 years of that term of life, that by slow and sure and long continuance of increase they might people the earth in due time."

3. The same exception lies to all the following periods of doubling, where the number far exceeds what it could possibly be in fact; but we shall pass them over, and come to the last of them in the year 110, in which the number of mankind is made 2048. Now in the year 110 not one of Adam's children were married,

* Cockburn upon the Deluge. But according to a later * writer upon the subject, the above table, though the numbers there may be thought sufficient for the peopling of the earth, we could by no means depend upon, for several reasons; particularly,

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Objections to Mr Whiston's table.

1. It is laid down there as a foundation, that the Antediluvians would double themselves every 40 years; as indeed they would, and in less time, after there came to be 100 marriages. Now, had the author observed this regular progression in his computation, by adding 40 years to every former period of the age of the world, the amount, instead of two millions of millions, &c. would have been above five millions of millions at the year 1656, the age of the world at the deluge, according to the Hebrew numbers, which he contends for. What would the sum then have been, had we carried on the computation for 600 years more according to the Septuagint?

2. He supposes the period of doubling must have been much shorter in the earliest ages, and much longer in the later, contrary to reason and fact. For mankind being sprung from one pair only, the increase at first must have been very slow, but come on very fast when a considerable number were married. His table therefore is made not regularly, but according to fancy, by unequal starts or chafms, at great intervals in the later part, where it should have been most regular; it would seem with no other view than to raise

Antediluvians.

ried because not yet come to the age of puberty. In that year of the world there could be no more than 18 or 20 persons, at single births, besides Adam and Eve. It is a great mistake therefore to imagine, that the periods of doubling were much shorter in the earlier times than in the later; the contrary of which is evident to reason.

Id. p. 81.

²³
Of the ages
of puberty
among the
Antediluvians.

According to our author, two errors have been fallen into in treating of this point; namely, 1. That in the first ages of the world, both before and after the Flood, men began to propagate their kind as early as they commonly do at present. 2. That the children of the same father succeeded one after another as fast as they do now, that is, that the women brought forth children every year. The first of these errors he confutes, by showing that the several periods or stages of man's life bear a just proportion to one another, and to the whole term of life; and that the period of puberty or maturity has not been the same at all times, but is according to the length or brevity of life in the different ages of the world, according to that remark of St Augustine, *Tanto serior fuit proportione pubertas, quanto vite totius major annositas*. Moses, he observes, gives the age of the world from the creation to the deluge, and from that period to his own time chiefly by generations. A generation is the interval of years between the births of father and son. This the Latins call *etas*, and the Greeks *γενεα*. Now, a generation, or the interval of years between father and son, has not been, neither possibly could be, the same in all ages from the beginning, as Vossius justly observes; but has varied greatly according to the length or brevity of man's life in the several periods of the world. Since the ordinary term of man's life has been reduced to 70 and 80 years, the time of puberty is in proportion to this brevity of life, and reckoned at 20 or 21, which is the fourth part of a life of fourscore. The several stages of human life are infancy, childhood, youth, manhood, full age, declension, old or decrepit age; all which commonly bear a proportion to the whole term of life. Now the bounds and limits of these several stages cannot be precisely the same in all, but vary in respect of the disposition of mens bodies, their course of life, and also the places and ages in which they live. In the Antediluvian world then, when men lived to upwards of 800 and 900 years, can it be thought that they passed through the several stages of life in as short a time as men do now, who seldom exceed 80, and not one in ten arrives at that age? But if the Antediluvians arrived at puberty or manhood as soon as men do now, then would the several stages of human life have been lost or confounded, and men would have started from childhood to manhood at once, without any due or regular intervals, contrary to the order of nature: But if, according to the present œconomy of nature, man is but a youth at 20, which is a fourth part of our term of life, we may reasonably conclude, there would be a suitable proportion of years in a much longer term of life, since nature is constant and uniform in her operations. And though in so long a life as the Anteluvians enjoyed, the time of puberty might be a fifth or a sixth part of their term of life, yet would they be but youths at 150 or 160; which bears much the same proportion to the whole of their life as 20 is to that of ours.

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The other is an error, he thinks, which could never have been fallen into, had it been considered, that every mother suckled her own children in those early days; and indeed where could she have found another to have done it for her?

Taking it for granted, then, that it was an universal custom for women to suckle their children as well before as after the flood, the next question is, for how long time they continued nurses? He shows various instances, that when man's life was reduced to 130 or 140 years, the ordinary time of nursing was two years: he thence infers, that for three or four generations after the flood, when men lived to above 400 years, the time would be so much longer in proportion, and would not be less than three or four years; and consequently that before the flood, when life was protracted to 800 or 900 years, it would be still longer in proportion to their longevity; so that five years might be the ordinary time of nursing in the Old World; and therefore that we cannot reckon less than six years between the births. For man's life being prolonged to so many hundred years at first for the more speedy peopling of the earth, he came by slow degrees to mature age, there being a long time required to rear up a body that was to last near 1000 years. The intervals therefore of infancy, childhood, youth, and mature age, were so much longer in proportion to ours as the difference is between our term of life and theirs; and 150 or 160 years, with respect to their longevity, was no more in proportion than 20 is to the brevity of our life. As the Antediluvians therefore were so very long in growing up to mature age, he concludes that the time of nursing could not be shorter than five years, and that the distance between the births in a regular way must be set at six years.

Upon the whole, he thinks it evident that there could be no such speedy increase of mankind at the beginning as is imagined; that the time of nursing above specified was no more than necessary for that strength of constitution which was to last for 800 and 900 years; and that women who were to continue bearing children for 340 or 360 years of their life, should have them but slowly, and at the distance of several years, that their strength might hold out, and that they might not be overburthened with too many cares at once; and therefore, when Eve's first child was six years old, it was time enough for her to have another, and so on, though possibly sometimes twins.

These points being discussed, he proceeds, 1. To compute what number upon the whole might be born into the world from the creation to near the time of the deluge: and then, 2. To state the needful deduction for deaths and other deficiencies.

I. 1. How long the parents of mankind continued in paradise, we know not; though longer perhaps than is commonly imagined. We shall even suppose two or three years, in which time there was no child born, nor any attempt towards it. We shall allow them two or three years more to lament their fall, and the miserable estate their want of faith and disobedience had brought them to, from a most happy condition; and suppose Cain to be born six years after the creation (in which supposition few, probably, will be apt to think us too hasty), and Abel again six years after him, and so every sixth year Eve to have had a child, the first

K

seven,

Antediluvians.

²⁴
Of the time
allotted for
nursing in
those early
days.

²⁵
Distance
between the
births.

²⁶
Cockburn's
calculation
of the in-
crease of
mankind.

Antediluvians.

seven, eight, or nine whereof were probably all males (the males being longer in coming to maturity than the females); and this distance between the births will also be thought a sufficient allowance. At this rate of increase Adam would have in 100 years 16 children, in 200 years 32, and in 400 years 64 children; when we will suppose Eve to have left off child-bearing. Nor need this number of Adam's children be thought too great, when there are instances in these later ages, and this short period of man's life, of those who have had 40 children at single births by two successive wives, and of many others who have had 20, 25, and 30, by one wife; though in such cases it is not to be supposed that the women suckled their children.

2. Though it is reasonable to think that the Antediluvians, notwithstanding their longevity, came to mature age at 150; yet as we are not sure that they all married so soon as they were ripe for marriage, and that the earliest in the genealogies is born in the 162d year of his father, who might probably be a first-born, our author does not suppose Cain, Abel, or any of the succeeding children or grandchildren of Adam to have married till they were 160, but to have had children from 161 or 162 till they were of the age of 500, at the fore-named distance or interval between the births; though Noah we know had three sons after he was 500, at the due intervals. And to all the Antediluvians we may allow, without fear of exceeding, 50 or 54 children in general, according to the course of nature, and the longevity of those first ages of the world.

3. Let us next inquire in what number of years the men of that world might double themselves, notwithstanding the long interval between the births. The increase indeed will be found very small for the first 300 or 400 years, as they were late in coming to maturity; but the succeeding ages will swell the account exceedingly. Let us suppose at present (what shall be proved afterwards), that in the year of the world 500, there were 200 persons only, male and female, of full age to marry, the men at 160, the women at 120 or thereabout. The first or second year after the marriage will probably produce 100 births from 100 couple, and every sixth year after 100 more. At this slow progression the 200 married persons will, in 19 or 20 years, be increased to 600: so that the number of mankind would be trebled in 20 years, after there came 100 pair to be married. And in this manner they would increase and multiply every 20 years, or in that space treble themselves,

It may perhaps be objected, that though it appears that such an increase might be at first from the first 100 marriages, yet they could not continue thus to multiply at such periods: because, according to the rule we have laid down, none of the issue of these 100 first marriages could increase the number of mankind till the men had attained the age of 160. It is true they could not: but then it must be remembered, that the first 100 pair are still adding every sixth year 100 more to the number of mankind, even till after the 400 born in the first 20 years are married, and begin a new stock for increase; so that when there came to be some hundred couples married, the increase and multiplication would come on very fast, and in 1000 years mankind would be prodigiously increased.

But though there be nothing in this supposition contrary to reason, viz. That after the year of the World 500, they might treble themselves in 20 years; yet we will not reckon upon so short an interval, but will allow a much longer time even to their doubling themselves, and shall exhibit two tables of doubling; the first at the interval of 50 years (much too long indeed), the other at the interval of 40 years, and both beginning at the year 500, when there could not be fewer (whatever more there might be) than 100 married or marriageable persons descended from Adam and Eve.

Antediluvians.

Years of the World.	Number of Mankind.
500	200
550	400
600	800
650	1,600
700	3,200
750	6,400
800	12,800
850	25,600
900	51,200
950	102,400
1,000	204,800
1,050	409,600
1,100	819,200
1,150	1,638,400
1,200	3,276,800
1,250	6,553,600
1,300	13,107,200
1,350	26,214,400
1,400	52,428,800
1,450	104,857,600
1,500	209,715,200
1,550	419,430,400
1,600	838,860,800
1,650	1,677,721,600
1,700	3,335,443,200
1,750	6,710,886,500
1,800	13,421,772,800
1,850	26,843,545,600
1,900	53,687,091,200
1,950	107,374,182,400
2,000	214,748,364,800
2,050	429,496,729,600

This table is calculated at the long interval of 50 years, that it may appear that even by under-rating the number of mankind, there would be so many millions born into the world before the deluge came, that they would be obliged to spread themselves over the face of the earth, though but one half of the sum total of 429,496 millions had been alive at the time of the deluge; but as the interval here allowed may appear to be too long for the time of doubling, the second is calculated at the interval of 40 years, which comes nearer to the truth of the case, though even this may exceed the time of doubling.

Years of the World.	Number of Mankind.
500	200
540	400
580	800
620	1,600
660	3,200
700	6,400

Antediluvians.	Years of the World.	Numbers of Mankind.
740	-	12,800
780	-	25,600
820	-	51,200
860	-	102,400
920	-	204,800
940	-	409,600
980	-	819,200
1,020	-	1,638,400
1,060	-	3,276,800
1,100	-	6,553,600
1,140	-	13,107,200
1,180	-	26,214,400
1,220	-	52,428,800
1,260	-	104,857,600
1,300	-	209,715,200
1,340	-	419,430,400
1,380	-	838,860,800
1,420	-	1,677,721,600
1,460	-	3,355,443,200
1,500	-	6,710,886,400
1,540	-	13,421,772,800
1,580	-	26,843,545,600
1,620	-	53,687,091,200
1,660	-	107,374,182,400
1,700	-	214,748,364,800
1,740	-	429,496,729,600
1,780	-	858,993,459,200
1,820	-	1,717,986,918,400
1,860	-	3,435,973,836,800
1,900	-	6,871,947,673,600
1,940	-	13,743,895,347,200
1,980	-	27,487,790,694,400
2,020	-	54,975,581,388,800

The first table is brought down no lower than to the year 2050, and the second to the year 2020, though there remain by the first 206, and by the second 236 years to the flood: the reason is, that in those last 200 years of the world, mankind would not increase in any measure equal to what they had done in the preceding years (though regularly the increase should have been much greater); because that violence was then great in the earth, and thousands, yea millions, might have been cut off by untimely deaths; for which cause the world's destruction was determined 120 years before the flood came.

27
Objection
answered.

II. But now against this immense number of mankind that might in a regular and ordinary way have been born into the world between the creation and the deluge in 2056 years, it will no doubt be objected by some (as it has been done to far less numbers), that all such calculations are mere guess-work, the product of fruitful imaginations.

But it should be considered, that in calculations of this nature some regular order or method must be observed: and though, according to the course of nature, such an increase and multiplication of mankind there might have been periodically, especially at the beginning, when the command was *to increase and multiply, and replenish the earth*; yet we will not suppose, that all things went on thus regularly, without difference or interruption. We do not know what extraordinary obstructions or interruptions there might be to such a

regular increase. Though every married pair might by the course of nature have had such a number of children as has been mentioned, yet the Divine Providence might order it otherwise in manifold instances; and it might possibly be in the Old World as it has been since the flood, viz. that some marriages have produced many children, others few, and some none at all. Allowing, therefore, for all such obstructions and deficiencies, and likewise for all casualties and accidents (to which men might be liable in that world as well as in the present), in as ample a manner as can be desired, let the former number be reduced to one half, viz. to 27,487,790,694,400, that is, 27 billions, or millions of millions, four hundred and eighty-seven thousand seven hundred and ninety millions, six hundred and ninety-four thousand and four hundred. And this we shall now suppose to be the whole number of those who were born into the world before the deluge. But from this sum is to be subtracted the number of those who died before that time.

Of those in the genealogies from Adam by Seth, Enoch was translated at the age of 365, Lamech, the father of Noah, died just before the flood, at 753, Mahalaleel at 895. Adam and the other five patriarchs lived to above 900. Before the year 900, therefore, we may suppose there were no deaths except that of Abel, who was slain, a young man, but that all born within that period were alive together. But in the tenth century death began to reign, and Adam and Eve, we may presume, were the first over whom death had power in a natural way, as their disobedience was the cause of it. The children also born of them in the first hundred years would also die in this 10th century, those born in the second hundred would die in the 11th, those born in the third century would die in the 12th, and so on. But though we are far from thinking that after the beginning of the 10th century (till which time few or none died), the deaths would be equal to the births; yet as we have made large concessions all along, we shall do the same in this case, and suppose them upon the whole to have been equal, especially since we cannot precisely say how soon that violence or bloodshed, which was their crying sin, came to prevail; and therefore will reduce the last sum mentioned to one half again, to allow for the deaths and prevailing violence, and suppose the total number of mankind alive upon the earth at the time of the deluge to have been no more than 13,743,895,347,200, that is, 13 billions, or millions of millions, seven hundred and forty-three thousand eight hundred and ninety-five millions, three hundred and forty-seven thousand and two hundred; a number vastly exceeding that of the present inhabitants of the whole earth.

Notwithstanding the very large allowances and abatements made to reduce the number of mankind, yet even the last reduction to 13 billions, or millions of millions, &c. seems so vastly great, that it will hardly be thought possible that such a number of men could ever be at one time upon the earth. Now though we pretend to no certainty in this point (which made it the more requisite to allow largely for deaths and deficiencies), yet the calculation we have given must appear highly probable, since it is founded on grounds certain and undeniable: For instance,

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1. It

Antediluvians.

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Probability
of the above
calculation.

Antediluvians.

1. It cannot be denied but that the Antediluvians were come to the age of puberty and marriage at 160 years, when we find a son born in 162. Nor,

2. Can it be said, that they could not have children at the age of 500, when we have an instance of one that had three sons at due distances after that age. Neither,

3. Can it be alleged, that we have not allowed a due distance or interval between the births, viz. six years, when most will be of opinion that it could not be so long. Nor yet,

4. Can it be judged, that we have made the period of doubling far too short, when we had before showed, that after 100 marriages consummated, they would treble themselves in half the time we have taken for their doubling. Nor,

5. Will any one make a doubt, but that there might be 200 persons of mature age for marriage in the year of the world 500; the men at 160, the women younger. Nevertheless, as this is the foundation of our calculation, we shall now show, that there was at least such a number of persons marriageable at that age of the world.

It may be observed, that as we take 160 for the year of maturity and marriage, according to that period all married or marriageable in the year 500 must have been born in or before the year 340; the males at least, though the females coming sooner to maturity, might some of them be born later or after the year 380. Now, according to this stated period of marriage,

1. In or before the year 340, Adam might have had 54 children, males and females, or 27 pair married or fit for marriage.

2. Cain, whom we suppose to be but six years younger than Adam (which by the by is more than others allow), and to have married in the year 166, might have, in the year 340, 28 children, or 14 pair fit for marriage; which added to the former, makes 41 pair.

3. Abel married six years later, that is, in the year 172, and whom we shall suppose slain in the year 225 or 226, could in that case have no more than eight or nine children, or four pair, which, with the former, make 45 pair.

4. Adam's third son, married in the year 178, will afford us, in the year 340, 26 children, or 13 pair, which increase the number of marriageable persons to 58 pair.

5. A fourth son of Adam's, married in the year 184, will give us in the year 340, 25 children, or 12 pair, which makes the number of pairs 70.

6. A fifth son of Adam's, married in the year 190, might, in the year 340, have 24 children, or 12 pair again, which increase the former number to 82 pair.

7. A sixth son of Adam's, married in the year 196, would have, in the year 340, 22 children, or 11 pair, which, added to the former, make up 93 pair.

8. A seventh son of Adam's, married in the year 202, will, in the year 340, give us 20 children, or 10 pair, which makes in the whole 103 pair, already three pair more than we reckoned upon. I need therefore go no farther on to the eighth or ninth son; but the following eight or nine births I may reasonably take to have been daughters, and married to the brothers that preceded them.

Here are now no more than 14 children of Adam's married, who have given us the 100 pair we have reckoned upon, and three over. We might yet have 13 pair to bring into the account, all born before the year 340, and marriageable in the year 500, which would very much increase the number of mankind. And by this the reader may perceive that we have been far from building on uncertain or precarious foundations, since we have omitted 13 pair more, which we might have taken into the account. And if it be considered, that the command given to Adam was to increase and multiply, and replenish the earth, no doubt can be made, but that his own and his childrens marriages were fruitful in the procreation of children, that the earth might be inhabited.

ANTEGO. See ANTIGUA.

ANTEJURAMENTUM, by our ancestors called *juramentum calumnie*, an oath which anciently both accuser and accused were to take before any trial or purgation.—The accuser was to swear, that he would prosecute the criminal; and the accused to make oath, on the day he was to undergo the ordeal, that he was innocent of the crime charged against him.

ANTELOPE, in zoology. See CAPRA.

ANTELUCAN, in ecclesiastical writers, is applied to things done in the night or before day. We find frequent mention of the antelucan assemblies (*Catus antelucani*) of the ancient Christians, in times of persecution for religious worship.

ANTEMURALE, in the ancient military art, denotes much the same with what the moderns call an *out-work*.

ANTENATI, in modern English history, is chiefly understood of the subjects of Scotland, born before king James the First's accession to the English crown, and alive after it. In relation to these, those who were born after the accession were denominated *postnati*. The antenati were considered as aliens in England, whereas the postnati claimed the privilege of natural subjects.

ANTENCLEMA, in oratory, is where the whole defence of the person accused turns on criminating the accuser. Such is the defence of Orestes, or the oration for Milo: *Occisus est, sed latro. Executus, sed raptor*.

ANTENICENE, in ecclesiastical writers, denotes a thing or person prior to the first council of Nice. We say, the Antenicene faith, Antenicene creeds, Antenicene fathers.

ANTENNÆ, in the history of insects, slender bodies with which nature has furnished the heads of these creatures, being the same with what in English are called *horns* or *feelers*. See ENTOMOLOGY.

ANTENOR, a Trojan prince, came into Italy, expelled the Enganians on the river Po, and built the city of Padua, where his tomb is said to be still extant.

ANTEPAGMENTA, in the ancient architecture, the jambs of a door. They are also ornaments, or garnishings, in carved work, of men, animals, &c. made either of wood or stone, and set on the architrave.

ANTEPENULTIMA, in grammar, the third syllable of a word from the end, or the last syllable but two.

ANTEPILANI, in the Roman armies, a name given to the hastati and principes, because they marched next before the triarii, who were called *pilani*.

AN-

Antego
||
Antepilani.

Anteilep-
tics
||
Anthem.

ANTEPILEPTICS, among physicians, medicines esteemed good in the epilepsy.

ANTEPOSITION, a grammatical figure, whereby a word, which by the ordinary rules of syntax ought to follow another, comes before it. As when, in the Latin, the adjective is put before the substantive, the verb before the nominative case, &c.

ANTEPREDICAMENTS, among logicians, certain preliminary questions which illustrate the doctrine of predicaments and categories.

ANTEQUIERA, a handsome town of Spain, in the kingdom of Granada, divided into two parts, the upper and lower. The upper is seated on a hill, and has a castle: the lower stands in a fertile plain, and is watered with a great number of brooks. There is a large quantity of salt in the mountain; and five miles from the town, a spring famous for the cure of the gravel. W. Long. 4. 40, N. Lat. 36. 51.

ANTERIOR, denotes something placed before another, either with respect to time or place.

ANTEROS, in mythology, one of the two Cupids who were the chief of the number. They are placed at the foot of the Venus of Medici; this is represented with a heavy and sullen look, agreeably to the poetical description of him, as the cause of love's ceasing. The other was called Eros.

ANTESIGNANI, in the Roman armies, soldiers placed before the standards, in order to defend them, according to Linspius; but Cæsar and Livy mention the antesignani as the first line, or first body, of heavy armed troops. The velites, who used to skirmish before the army, were likewise called *antesignani*.

ANTESTATURE, in fortification, a small retrenchment made of palisades, or sacks of earth, with a view to dispute with an enemy the remainder of a piece of ground.

ANTESTARI, in Roman antiquity, signifies to bear witness against any one who refused to make his appearance in the Roman courts of judicature, on the day appointed, and according to the tenor of his bail. The plaintiff, finding the defendant after such a breach of his engagement, was allowed to carry him into court by force, having first asked any of the persons present to bear witness. The person asked to bear witness in this case, expressed his consent by turning his right ear, which was instantly taken hold of by the plaintiff, and this was to answer the end of a subpoena. The ear was touched upon this occasion, says Pliny, as being the seat of memory, and therefore the ceremony was a sort of caution to the party to remember his engagement.

ANTEVIRGILIAN HUSBANDRY, an appellation given to Mr Tull's new method of horse-hoeing husbandry. See AGRICULTURE.

ANTHELION, See CORONA and PARHELION.

ANTHELIX, in anatomy, the inward protuberance of the external ear, being a semicircle within, and almost parallel to the helix. See ANATOMY.

ANTHELMINTICS, among physicians, medicines proper to destroy worms.

ANTHEM, a church-song performed in cathedral-service by choristers, who sung alternately. It was used to denote both psalms and hymns, when performed in this manner. But, at present, anthem is used in a more confined sense, being applied to certain passages taken

out of the scriptures, and adapted to a particular solemnity. Anthems were first introduced in the reformed service of the English church, in the beginning of the reign of Queen Elizabeth.

ANTHEMIS, CAMOMILE: A genus of the polygamia superflua order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Composita discoides*. The essential characters are these: The receptaculum is chaffy; there is no pappus; the calyx is hemispheric and subequal; and the florets of the ray are more than five. Of this genus Linnaeus enumerates 17

Species; of which the most remarkable are the following. 1. The nobilis, or common camomile, grows in plenty upon commons, and other waste land. It is a trailing perennial plant, which puts out roots from the branches, by which it spreads and multiplies greatly. Of this kind there is a variety with double leaves.—Formerly this plant was used for planting of walks; which when mowed and rolled, looked well for some time; but as it was subject to decay in large patches, the walks became unsightly, and it was therefore disused. 2. The pyrethrum, or pellitory of Spain, is a perennial plant, which grows naturally in Spain and Portugal, from whence the roots are brought to Britain. The branches trail upon the ground, and spread a foot or more each way; these are garnished with fine winged leaves like those of the common camomile. At the extremity of each branch is produced one large single flower, like camomile, but much larger; the rays of which are of a pure white within, but purple on the outside. After the flowers are past, the receptacle swells to a large scaly cone, having the seeds lodged between its scales; but unless the season is dry, the seeds will not come to perfection in this country. 3. The tinctoria, with sawed winged leaves, is a perennial plant, which flowers from June to November, and makes a very pretty appearance, some of the flowers being of a white, others of a sulphur, and some of a bright yellow colour. 4. The Arabica, with a branching empalement. The seeds of this species were brought from Africa by the late Dr Shaw, and distributed to many curious botanists in this and other countries of Europe. It grows near two feet high, with an upright stem, having a single flower at the top, from whose empalement there are two or three footstalks put out horizontally, about two inches long, each having a single flower smaller than the first, like the childing marigold, or hen and chicken daisy.

Culture. The first sort may be very easily propagated by procuring a few slips in the spring, and planting them about a foot distant from one another, where they will soon cover the ground. The other sorts may be propagated from seeds sown in the spring, and will require no other care than to be kept free from weeds: only the third sort must be transplanted when come up from the seeds into borders near shrubs, where they may have room to grow; for they spread very wide, and therefore require to be placed three feet distant from other plants.

Medicinal Uses. The first and second sorts are used in medicine. The first have a strong not ungrateful, aromatic smell, and a very bitter nauseous taste. They are accounted carminative, aperient, emollient, and in some measure anodyne; and stand recommended in flatulent

Anthera,
Antheri-
cum.

tulent colics, for promoting the uterine purgations, in spasmodic pains, and the pains of childbed-women: sometimes they have been employed in intermittent fevers, and the nephritis. These flowers are frequently also used externally in discutient and antiseptic fomentations, and in emollient glysters. They enter the *decoctum pro enemate* and *decoctum pro fomento* of our pharmacopœias. An essential oil was formerly directed to be prepared from them, but it is now omitted. A simple watery infusion of them taken in a tepid state, is at present frequently employed to promote the operation of emetics. The root of the pyrethrum is the only part endowed with medical virtue. It has no sensible smell; its taste is very hot and acrid, but less so than that of arum or dracunculus: the juice expressed from it has scarce any acrimony, nor is the root itself so pungent when fresh as after it has been dried. Water, assisted by heat, extracts some share of its taste, rectified spirit the whole; neither of them elevate any thing in distillation. The principal use of pyrethrum in the present practice is as a masticatory, for promoting the salival flux, and evacuating viscid humours from the head and neighbouring parts; by this means it often relieves the tooth ach, some kinds of pains of the head, and lethargic complaints.

ANTHERA, among botanists, that part of the stamen which is fixed on the top of the filamentum, within the corolla: it contains the pollen or fine dust, which, when mature, it emits for the impregnation of the plant, according to Linnæus. The APEX of Ray, Tournef. & Rivin; *Capsula flaminis*, of Malpighi.

ANTHERICUM, SPIDER-WORT: A genus of the monogynia order, belonging to the hexandria class of plants; and, in the natural method, ranking under the 10th order, *Coronariæ*. The characters are: There is no calyx: The corolla consists of six oblong petals, which are expanding: The stamina consist of six subulated erect filaments; the antheræ are small and furrowed: The pistillum has a three-cornered germen, a simple stylus, and obtuse stigma: The pericarpium is an ovate trifurcated capsule, with three cells and three valves: The seeds are numerous and angular. Of this genus Linnæus reckons up nine

Species. But only the three following seem to deserve notice. 1. The ramosum, with a branching stalk 2. The liliago. These are perennial plants, which are natives of Spain, Portugal, and other warm countries. They were formerly pretty common in the English gardens; but the severe winter of 1740 killed most of their roots. They flower in June and July, and the seeds are ripe in September. 3. The frutescens, with a shrubby stalk, was formerly known among the gardeners near London by the name of *onion-leaved aloe*. It produces many ligneous branches from the root, each supporting a plant with long taper leaves, in shape like those of an onion, and full of a yellow pulp very juicy. These plants send out roots, which run down and fasten themselves into the earth, by which they multiply greatly. The flowers are produced on long loose spikes, are yellow, and appear at different times, so that the plants are never long destitute of flowers. This species is a native of the Cape of Good Hope.

Culture. The two first are propagated by seeds, which should be sown in the autumn, in a warm situation, on a bed of light sandy earth. When the plants come up

they must be kept clear of weeds during the summer; and in autumn, when the leaves decay, they should be carefully taken up and transplanted into a bed of light earth, at a foot distance from one another. If the winter prove severe, they should be covered with straw, pease-haulm, or old tan. The third likewise requires shelter in winter; though some of them will live in the open air, if planted close to the warm wall.

ANTHESPHORIA, in antiquity, a Sicilian festival instituted in honour of Proserpine. The word is derived from the Greek *ανθος*, flower, and *φερω*, I carry; because that goddess was forced away by Pluto when she was gathering flowers in the fields. Yet Festus does not ascribe the feast to Proserpine; but says it was thus called by reason ears of corn were carried on this day to the temples.—Anthesphoria seems to be the same thing with the *florifertum* of the Latins, and answers to the harvest-home among us.

ANTHESTERIA, in antiquity, was a feast celebrated by the Athenians in honour of Bacchus. The most natural derivation of the word is from the Greek *ανθος* (*flos*), a flower, it being the custom at this feast to offer garlands of flowers to Bacchus.

The antheateria lasted three days, the 11th, 12th, and 13th of the month; each of which had a name suited to the proper office of the day. The first day of the feast was called *ανθωγία*, i. e. *opening of the vessels*; because on this day they tapped the vessels, and tasted the wine. The second day they called *χρως*, *congiu*, the name of a measure containing the weight of 10 pounds; on this they drank the wine prepared the day before. The third day they called *χύποι*, *kettles*: on this day they boiled all sorts of pulse in kettles; which however they were not allowed to taste, as being offered to Mercury.

ANTHESTERION, in ancient chronology, the sixth month of the Athenian year. It contained 29 days; and answered to the latter part of our November and beginning of December. The Macedonians called it *desion* or *desion*. It had its name from the festival antheateria kept in it.

ANTHISTIRIA, in botany: A genus of the trigynia order, belonging to the triandria class of plants; and, in the natural method, ranking under the 4th order, *Gramina*. The characters are: The calyx is a four-valved glume equally cleft to the base: The corolla is a two-valved glume: The stamina consist of three short slender filaments; the antheræ oblong and erect: The pistillum has an oblong germen; the styli are two; and the stigmata are clavated and hairy: There is no pericarpium, except a closed calyx: The seed is oblong and furrowed. There is only one species of this grass, the ciliata or fringed anthistiria, a native of India.

ANTHOCEROS, or HORN-FLOWER: A genus of the order of algæ, belonging to the cryptogamia class of plants; and, in the natural method, ranking under the 57th order, *Algæ*. The essential characters are: The calyx of the male is sessile, cylindric, and entire; the antheræ (one) is subulated, very long, and two-valved: The calyx of the female is monophyllous, divided into six parts, and expanding: The seeds are about three, naked and roundish.—There are only three species of the anthoceros, viz. the punctatus or spotted anthoceros, a native of Britain; the lævis, a native of Europe

Anthes-
phoria
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Anthoceros

Anthology
||
Anthony.

Europe and America; and the multifidus, a native of Germany. It is found in moist shady places, and on heaths.

ANTHOLOGION, the title of the service-book used in the Greek church. It is divided into 12 months, containing the offices sung throughout the year, on the festivals of our Saviour, the Virgin, and other remarkable saints.

ANTHOLOGY, a discourse of flowers, or of beautiful passages from any authors.—It is also the name given to a collection of epigrams taken from several Greek poets.

ANTHOLYZA, **MAD-FLOWER**: A genus of the monogynia order, belonging to the triandria class of plants; and in the natural method ranking under the 6th order, *Enfata*. The essential characters are these: The calyx is tubular, irregular, and bent back; and the capsule is beneath the flower.

Species. 1. The ringens, whose flower-slips spread asunder. This hath red, round, bulbous roots, from which arise several rough furrowed leaves, near a foot long, and half an inch broad: between these comes out the flower-stalk immediately from the root, which rises two feet high, is hairy, and hath several red flowers coming out on each side. These appear in June, and the seeds ripen in September. 2. The spicata, with narrow furrowed leaves, is in shape and size like the vernal crocus, but the outer skin is thin and white; from this arise five or six long narrow leaves, which are deeply furrowed. Between these arise the flower-stem, which is a foot and an half high, bending on one side towards the top, where the flowers come out on one side, standing erect. They are of a white colour, appear in May, and the seeds ripen in August. Both these species are natives of Africa, from whence their seeds were first obtained, and raised in the Dutch gardens.

Culture. The antholyza may be propagated by offsets, which it sends off in pretty great plenty; or by seeds, which are sometimes perfected in Europe. These should be sown soon after they are ripe, in pots of light earth; which, if plunged in old beds of tan which has lost its heat, and shaded in the middle of the day in hot weather, they will come up the following winter: therefore they must be kept covered with glasses to screen them from cold, otherwise the young plants will be destroyed. They may remain in the pots two years, if the plants are not too close, when they will have acquired strength enough to bear transplanting; the proper time for which is in July and August, when their leaves are decayed. In summer the pots may be placed in the open air, but in winter they must be placed under a hot-bed frame; or in the green house, where they are a great ornament when in flower.

ANTHONY (St), was born in Egypt in 251, and inherited a large fortune, which he distributed among his neighbours and the poor, retired into solitude, founded a religious order, built many monasteries, and died anno 356. Many ridiculous stories are told of his conflicts with the devil and of his miracles. There are seven epistles extant attributed to him.

St Anthony is sometimes represented with a fire by his side, signifying that he relieves persons from the inflammation called after his name; but always accompanied by a hog, on account of his having been a swine-

herd, and curing all disorders in that animal. To do him the greater honour, the Romanists in several places keep at common charges a hog denominated *St Anthony's hog*, for which they have great veneration. Some will have St Anthony's picture on the walls of their houses, hoping by that to be preserved from the plague; and the Italians, who do not know the true signification of the fire painted at the side of their saint, concluding that he preserves houses from being burnt, invoke him on such occasions. Both painters and poets have made very free with this saint and his followers: the former, by the many ludicrous pictures of his temptation: and the latter, by divers epigrams on his disciples or friars; one of which is the following, printed in Stephen's World of Wonders:

Once fedd'st thou, Anthony, an herd of swine,
And now an herd of monks thou feedest still.
For wit and gut alike both charges bin;
Both loven filth alike; both like to fill
Their greedy panch alike; nor was that kind
More beastly, sottish, swinish, than this last.
All else agrees: one fault I only find,
Thou feedest not thy monks with oaken mast.

ANTHONY, or *Knights of St ANTHONY*, a military order, instituted by Albert Duke of Bavaria, Holland, and Zealand, when he designed to make war against the Turks in 1382. The knights wore a collar of gold made in form of a hermit's girdle, from which hung a stick cut like a crutch, with a little bell, as they are represented in St Anthony's pictures.

St ANTHONY also gives the denomination to an order of religious founded in France about the year 1095 to take care of those afflicted with St Anthony's fire: (see the next article.) It is said, that, in some places, these monks assume to themselves a power of giving, as well as removing, the *ignis sacer*, or erysipelas; a power which stands them in great stead for keeping the poor people in subjection and extorting alms. To avoid the menaces of these monks, the country people present them every year with a fat hog a-piece. Some prelates endeavoured to persuade Pope Paul III. to abolish the order; *questuarios istos sancti Anthonii, qui decipiunt rusticos et simplices, eosque enumeris superstitionibus implicent, de medio tollendos esse.* But they subsist, notwithstanding, to this day in several places.

St ANTHONY'S Fire, a name popularly given to the erysipelas. Apparently it took this denomination, as those afflicted with it made their peculiar application to St Anthony of Padua for a cure. It is known, that anciently particular diseases had their peculiar saints: thus, in the ophthalmia, persons had recourse to St Lucia; in the tooth-ach, to St Appollonia; in the hydrophobia, to St Hubert, &c.

ANTHORA, in botany, the trivial name of a species of *Aconitum*. See **ACONITUM**.

ANTHORISMUS, in rhetoric, denotes a contrary description or definition of a thing from that given by the adverse party. Thus, if the plaintiff urge, that to take any thing away from another without his knowledge or consent, is a theft; this is called *opes*, or definition. If the defendant reply, that to take a thing away from another without his knowledge or consent, provided it be done with design to return it to him again, is not theft; this is an *Ανθорισμος*.

ANTHOS.

Anthony
||
Anthonimus.

Anthospermum
||
Anthropolatria.

ANTHOSPERMUM, the **AMBER TREE**: A genus of the dicæcia order, belonging to the polygamia class of plants; and in the natural method ranking under the 47th order, *Stellata*. The essential characters are: The calyx of the hermaphrodite flower is divided into four parts; there is no corolla; the stamina are four, and the pistilli two; the germen is beneath the flower. Male and female on the same or separate plants.

Species. Of this genus Linnaeus mentions three; the *Ethiopeca*, *ciliari*, and *herbacea*; but the first is most generally known in the gardens of the curious. Its beauty consists in the small evergreen leaves, which grow as close as heath. These being bruised between the fingers, emit a very fragrant odour; whence the name amber-tree.

Culture. This plant is easily propagated by cuttings during any of the summer-months, in a border of light earth; where they will take root in six weeks time, provided they are watered or shaded as the season may require; or if they are planted in pots plunged in a moderate hot-bed, they will take root the sooner, and there will be a greater certainty of their growing. They must be frequently renewed by cuttings, as the old plants are very subject to decay, and seldom last above three or four years.

ANTHOXANTHUM, or **VERNAL GRASS**: A genus of the digynia order, belonging to the diandria class of plants; and in the natural method ranking under the fourth order, *Gramina*. The essential characters are: The calyx is a bivalved gluma, with one flower; the corolla is bivalved, obtuse, and without any awn.

There are three species of anthoxanthum: viz. the *odoratum*, or spring-grass, a native of Britain; the *indicum*, a native of India; and the *paniculatum*, a native of the southern parts of Europe. The *odoratum* is one of the earliest spring grasses, and is extremely common in our fertile pastures. The delightful smell of new-mown hay is chiefly from this plant. Cows, horses, sheep, and goats eat it.

ANTHRACIS, **ANTHRACIAS**, or **ANTHRACITIS**, names promiscuously used by ancient naturalists for very different fossils; viz. the carbuncle, hæmatites, and a kind of asteria. See **CARBUNCLE**, &c.

ANTHRACOSIS, in medicine, a corrosive scaly ulcer either in the bulb of the eye or the eye-lids.

ANTHRAX, a Greek term, literally signifying a burning coal, used by the ancients to denote a gem, as well as a disease, more generally known by the name of *carbuncle*.

ANTHRAX is sometimes also used for lithanthrax or pitcoal. See **LITHANTHRAX**.

ANTHROPOGLOTTUS, among zoologists, an appellation given to such animals as have tongues resembling that of mankind, particularly to the parrot kind.

ANTHROPOGRAPHY, denotes the description of the human body, its parts, structure, &c. See **ANATOMY**.

ANTHROPOLATRÆ, in church-history, an appellation given to the Nestorians, on account of their worshipping Christ, notwithstanding that they believed him to be a mere man.

ANTHROPOLATRIA, the paying divine honours to a man; supposed to be the most ancient kind of idolatry.

ANTHROPOLITES, a term denoting petrifications of the human body, as those of quadrupeds are called *zoolites*. Anthropolites.

It has been doubted whether any real human petrifications ever occur, and whether those which have been supposed such were not mere *lusus natura*. But the generality of naturalists best versed in this branch assure us of real anthropolites being sometimes found. And indeed, as it is universally admitted that the zoolites are frequently seen, what negative argument therefore can be brought against the existence of the others? Are not the component parts of the human body nearly similar to those of the brute creation? Consequently, correspondent matter may be subject to, and acquire, the like accidental changes, wherever the same power or causes concur to act upon either object. If the former are not so common, it may be accounted for, in some measure, by reflecting that human bodies are generally deposited in select and appropriated places; whereas the bones of animals are dispersed every where, and falling into various beds of earth, at a greater or less depth, there is more probability of their encountering the petrifying agent. Could we credit some authors who have treated on this subject, they will tell us of entire bodies and skeletons that were found petrified: One in particular, discovered at Aix-en-Provence anno 1583, in a rocky cliff, the cerebrum whereof, when struck against a piece of steel, produced sparks, the bones being at the same time friable. The reports of Happel and Kircher are two absurd for belief. Van Helmont's strange relations, together with those of Jean a Costa, must also be rejected as fabulous. Scheuchzer has published an engraved figure, which he calls the *Antediluvian man*: how far it is authentic, it would be rash to say. It is, however, asserted by many respectable writers on natural history, that whole skeletons petrified have been brought to light from certain old mines, which remained closed up and disused for several centuries. These indeed are acknowledged to be very rare. Yet it is a known fact, that detached parts, osteolithi, are sometimes found, especially in situations where either the water, the soil, or both, have been observed to possess a strong putrescent quality. The human vertebrae, fragments or portions of the tibia, and even the whole cranium itself, have been seen in an absolute state of petrification. Some of these are said to appear vitriolated or mineralized. As to the petrified bones of pretended giants, they are more probably real zoolites, the bones of the larger animals. All these bones are found in various states, and under different appearances. Some are only indurated; others calcined, vitriolated or mineralized; some, again, are simply incrustated; whilst others have been proved completely petrified. Notwithstanding what is here advanced, it may be granted that a positive *lusus natura*, in some hands, is repeatedly mistaken for a real petrification. They are, however, distinguishable at all times by an experienced naturalist; particularly by the two following rules: First, We may determine that fossil a *lusus natura* which, on a strict examination, is observed to deviate in any material degree from the true *res analogica existens*. Secondly, By the same parity of reasoning, those fossil shells are to be esteemed certain petrifications, and genuine Antediluvian *reliquie*, in which, on a comparison

Anthropo-
logy
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Anthropo-
phagi.

son with their *analogues* collected from the sea, there appears an exact conformity in size and figure. This comparative observation will hold good for all fossils; that is, such as present themselves either under the animal or vegetable form. It is nevertheless worthy of notice, that all testaceous fossils are not petrified; since some kinds of them have been found in beds of sand, which retained their original perfect shape and quality, but at the same time they proved very brittle, indeed scarcely bearing the most gentle touch. Shells of this description are always dissoluble by acids, in contradistinction to the petrified or calcareous fossil shells, whose property it is to resist the action of such like *menstrua*. See further the article PETRIFICATION.

ANTHROPOLOGY, a discourse upon human nature.

ANTHROPOLOGY, among divines, denotes that manner of expression by which the inspired writers attribute human parts and passions to God.

ANTHROPOMANCY, a species of divination, performed by inspecting the entrails of a human creature.

ANTHROPOMORPHA, a term formerly given to the primates of that class of animals which have the greatest resemblance to the human kind.

ANTHROPOMORPHISM, among ecclesiastical writers, denotes the heresy or error of the Anthropomorphites. See the next article.

ANTHROPOMORPHITES, in church-history, a sect of ancient heretics, who, taking every thing spoken of God in Scripture in a literal sense, particularly that passage of Genesis in which it is said *God made man after his own image*, maintained that God had a human shape. They are likewise called *Audeans*, from Audeus their leader.

ANTHROPOMORPHOUS, something that bears the figure or resemblance of a man. Naturalists give instances of anthropomorphous plants, anthropomorphous minerals, &c. These generally come under the class of what they call *lusus nature*, or monsters.

ANTHROPOPATHY, a figure or expression by which some passion is ascribed to God, which properly belongs only to man.

ANTHROPOPHAGI, (of *ανθρωπος* a man, and *φαγω* to eat, MEN-EATERS. That there have been, in almost all ages of the world, nations who have followed this barbarous practice, we have abundance of testimonies.

The Cyclops, the Lestrygons, and Scylla, are all represented in Homer as *Anthropophagi*, or man-eaters; and the female phantoms, Circe and the Syrens, first bewitched with a show of pleasure, and then destroyed. This, like the other parts of Homer's poetry, had a foundation in the manner of the times preceding his own. It was still, in many places, the age spoken of by Orpheus,

When men devour'd each other like the beasts,
Gorging on human flesh.—

According to Herodotus, among the Essedonian Scythians, when a man's father died, the neighbours brought several beasts, which they killed, mixed up their flesh with that of the deceased, and made a feast. Among the Massagetæ, when any person grew old, they killed him and eat his flesh; but if he died of sick-

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ness, they buried him, esteeming him unhappy. The same author also assures us, that several nations in the Indies killed all their old people and their sick, to feed on their flesh: he adds, that persons in health were sometimes accused of being sick, to afford a pretence for devouring them. According to Sextus Empiricus, the first laws that were made, were for the prevention of this barbarous practice, which the Greek writers represent as universal before the time of Orpheus.

Of the practice of anthropophagy in later times, we have the testimonies of all the Romish missionaries who have visited the internal parts of Africa, and even some parts of Asia. Herrera speaks of great markets in China, furnished wholly with human flesh, for the better sort of people. Marcus Paulus speaks of the like in his time, in the kingdom of Concha towards Quinsay, and the island of Zapengit; others, of the great Java; Barbosa, of the kingdom of Siam and island of Sumatra; others, of the islands in the Gulf of Bengal, of the country of the Samogitians, &c.

The philosophers Diogenes, Chrysippus, and Zeno, followed by the whole sect of Stoics, affirmed that there was nothing unnatural in the eating of human flesh; and that it was very reasonable to use dead bodies for food, rather than to give them a prey to worms and putrefaction. In order to make the trial, however, whether there was any real repugnancy in nature to the feeding of an animal with the flesh of its own species, Leonardus Floroventius fed a hog with hog's flesh, and a dog with dog's flesh; upon which he found the bristles of the hog to fall off, and the dog to become full of ulcers.

When America was discovered, this practice was found to be almost universal, inasmuch that several authors have supposed it to be occasioned through a want of other food, or through the indolence of the people to seek for it; though others ascribe its origin to a spirit of revenge.

It appears pretty certain from Dr Hawkesworth's Account of the Voyages to the South Seas, that the inhabitants of the island of New Zealand, a country unfurnished with the necessaries of life, eat the bodies of their enemies. It appears also to be very probable, that both the wars and anthropophagy of these savages take their rise and owe their continuance to irresistible necessity, and the dreadful alternative of destroying each other by violence, or of perishing by hunger. See vol. iii. p. 447, & seq. and vol. ii. p. 389, &c.

Mr Mariden also informs us, that this horrible custom is practised by the Battas, a people in the island of Sumatra. "They do not eat human flesh (says he) as a means of satisfying the cravings of nature, owing to a deficiency of other food; nor is it sought after as a gluttonous delicacy, as it would seem among the New Zealanders. The Battas eat it as a species of ceremony; as a mode of showing their detestation of crimes, by an ignominious punishment; and as a horrid indication of revenge and insult to their unfortunate enemies. The objects of this barbarous repast are the prisoners taken in war, and offenders convicted and condemned for capital crimes. Persons of the former description may be ransomed or exchanged, for which they often wait a considerable time; and the latter suffer only when their friends cannot redeem them by the customary fine of twenty beenchangs, or eighty dollars.

L

Anthropo-
phagi,
Anthropo-
phagia.

dollars. These are tried by the people of the tribe where the fact was committed, but cannot be executed till their own particular raja or chief has been acquainted with the sentence; who, when he acknowledges the justice of the intended punishment, sends a cloth to cover the delinquent's head, together with a large dish of salt and lemons. The unhappy object, whether prisoner of war or malefactor, is then tied to a stake: the people assembled throw their lances at him from a certain distance; and when mortally wounded, they run up to him, as if in a transport of passion; cut pieces from the body with their knives; dip them in the dish of salt and lemon-juice; slightly broil them over a fire prepared for the purpose; and swallow the morsels with a degree of savage enthusiasm. Sometimes (I presume according to the degree of their animosity and resentment) the whole is devoured; and instances have been known, where, with barbarity still aggravated, they tear the flesh from the carcase with their mouths. To such a depth of depravity may man be plunged, when neither religion nor philosophy enlighten his steps! All that can be said in extenuation of the horror of this diabolical ceremony is, that no view appears to be entertained of torturing the sufferers; of increasing or lengthening out the pangs of death; the whole fury is directed against the corse; warm indeed with the remains of life, but past the sensation of pain. I have found a difference of opinion in regard to their eating the bodies of their enemies slain in battle. Some persons long resident there, and acquainted with their proceedings, assert that it is not customary; but as one or two particular instances have been given by other people, it is just to conclude, that it sometimes takes place, though not generally. It was supposed to be with this intent that raja Neabin maintained a long conflict for the body of Mr Nairne, a most respectable gentleman and valuable servant of the India Company, who fell in an attack upon the campong of that chief, in the year 1775."

It may be said, that whether the dead body of an enemy be eaten or buried, is a matter perfectly indifferent. But whatever the practice of eating human flesh may be in itself, it certainly is relatively, and in its consequences, most pernicious. It manifestly tends to eradicate a principle, which is the chief security of human life, and more frequently restrains the hand of the murderer, than the sense of duty or the dread of punishment. If even this horrid practice originates from hunger, still it must be perpetrated from revenge. Death must lose much of its horror among those who are accustomed to eat the dead; and where there is little horror at the sight of death, there must be less repugnance to murder. See some further observations on this subject, equally just and ingenious, by Dr Hawkesworth, *ut supra*.

ANTHROPOPHAGIA, the act or habit of eating human flesh. This is pretended by some to be the effect of a disease, which leads people affected with it to eat every thing alike. Some choose only to consider it as a species of *PICA*. The annals of Milan furnish an extraordinary instance of anthropophagy. A Milanese woman, named Elizabeth, from a depraved appetite, like what women with child, and those whose menies are obstructed, frequently experience, had an invincible inclination to human flesh, of which she

made provision by enticing children into her house, where she killed and salted them; a discovery of which having been made, she was broken on the wheel and burnt in 1519.

ANTHROPOSCOPIA, from *ανθρωπος*, and *σκοπια*, I consider, the art of judging or discovering a man's character, disposition, passions, and inclinations, from the lineaments of his body. In which sense, anthroposcopia seems of somewhat greater extent than physiognomy or metoposcopy. Otto has published an *Anthroposcopia, sive judicium hominis de homine ex lineamentis externis*.

ANTHROPOTHYSIA, the inhuman practice of offering human sacrifices. See *SACRIFICE*.

ANTHUS, in ornithology, a synonyme of a species of *loxia*. See *LOXIA*.

ANTHYLLIS, *KIDNEY-VETCH*, or *Lady's finger*: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The essential characters are: The calyx is ventricose, and the legumen is roundish and covered.

Species. Linnæus enumerates nine species; of which the following seem to be most worthy of attention.

1. The *vulneraria*, with unequal winged leaves, is a native of Spain and Portugal, as likewise of Wales. It is a biennial plant, having single leaves at bottom, which are oval and hairy; but those which grow out of the stalks are winged, each being composed of two or three pair of lobes terminated by an odd one. The flowers grow collected into heads at the top of the stalks, are of a bright scarlet colour, and make a pretty appearance. It flowers in June and July, and the seeds ripen in October. 2. The *montana* or herbaceous woundwort, with winged leaves, grows naturally in the mountains in the south of France, and in Italy. It is garnished with winged leaves, which have an equal number of hairy lobes at the extremity of the branches. The flowers are produced in heads, and are of a purple colour and globular form. They appear in June and July, and the seeds ripen in October. 3. The *barbajovis*, or silver-bush, has its name from the whiteness of its leaves. This is a shrub which often grows to the height of ten or twelve feet, dividing into many lateral branches, garnished with winged leaves composed of an equal number of narrow lobes, which are very white and hairy: the flowers are produced at the extremities of the branches, collected into small heads; these are of a bright yellow colour, and appear in June; sometimes they are succeeded by short woolly pods, containing two or three kidney-shaped seeds: but unless the season proves warm, they do not ripen in this country. 4. The *cytisoides*, or shrubby woundwort; has long been known in the English gardens. It is a low shrub, seldom rising above two feet high, but sends out many slender branches, garnished with hoary leaves, which are sometimes single, but generally have three oval lobes, the middle being longer than the other two: the flowers are yellow, and come out from the sides of the branches, three or four joined together, having woolly impalements; but these are rarely succeeded by seeds in England.

Culture. The first and second sorts require no particular management further than being kept free from weeds. The third and fourth may be propagated by cuttings.

Anthropo-
scopia
||
Anthyllis.

Anthypophora || **Antichrist**. cuttings planted during any of the summer months; observing to shade and water them till they have taken good root; when they are to be transplanted into pots, and must always be housed in winter.

ANTHYPOPHORA, in rhetoric, a figure of speech; being the counter part of an hypophora. See **HYPOPHORA**.

ANTI, a Greek preposition, which enters into the composition of several words, both Latin, French, and English, in different senses. Sometimes it signifies *before*, as an anti-chamber; and sometimes *opposite* or *contrary*, as in the names of these medicines, anti-scorbutic, anti-venereal.

ANTI, in matters of literature, is a title given to divers pieces written by way of answer to others, whose names are usually annexed to the anti. See the *Anti* of M. Baillet; and the *Anti-Baillet* of M. Menage: there are also *Anti-Menagiani*, &c. Cæsar the dictator wrote two books by way of answer to what had been objected to him by Cato, which he called *Anti-Catones*; these are mentioned by Juvenal, Cicero, &c. Vives assures us, he had seen Cæsar's *Anti-Catones* in an ancient library.

ANTIBACCHIUS, in ancient poetry, a foot consisting of three syllables, the two first long, and the last one short; such is the word *āmbirē*.

ANTIBES, a sea-port town of Provence in France, with a strong castle. Its territory produces excellent fruit; and the town stands opposite to Nice, in the Mediterranean. E. Long. 7. 5. N. Lat. 43. 35.

ANTICHAMBER, an outer chamber for strangers to wait in, till the person to be spoken with is at leisure.

ANTICHORUS, in botany: A genus of the monogynia order, belonging to the octandria class; of which the essential characters are: The calyx is a four-leaved perianthium; The corolla consists of four expanding petals; The pericarpium is a capsule, above, subulated, with four cells and four valves: The seeds are very numerous. There is but one species, the *depressus*, a native of Arabia.

ANTICHRIST, among ecclesiastical writers, denotes a great adversary of Christianity, who is to appear upon the earth towards the end of the world.

We have demonstrations, disputations, and proofs, in great order and number, both that the pope is, and that he is not, Antichrist.

F. Calmet is very large in describing the father and mother of Antichrist, his tribe and pedigree, his wars and conquests, his achievements against Gog, Magog, &c.

Some place his capital at Constantinople, others at Jerusalem, others at Moscow, and some few at London; but the generality at Rome, though these last are divided. Grotius and some others suppose Rome Pagan to have been the seat of Antichrist: most of the Lutheran and reformed doctors contend earnestly for Rome Christian under the papal hierarchy. In fact, the point having been maturely debated at the council of Gap, held in 1603, a resolution was taken thereupon, to insert an article in the confession of faith, whereby the pope is formally declared to be Antichrist.—Pope Clement VIII. was stung to the quick with this decision; and even king Henry IV. of France was not a little

mortified, to be thus declared, as he said, an imp of Antichrist.

M. le Clerc holds, that the rebel Jews and their leader Simon, whose history is given by Josephus, are to be reputed as the true Antichrist. Lightfoot and Vanderhart rather apply this character to the Jewish Sanhedrim. Hippolitus and others held that the devil himself was the true Antichrist; that he was to be incarnate, and make his appearance in human shape before the consummation of all things. Others among the ancients held that Antichrist was to be born of a virgin by some prolific power imparted to her by the devil. A modern writer* of the female sex, whom many hold for a saint, has improved on this sentiment; maintaining that Antichrist is to be begotten by the devil on the body of a witch by means of the semen of a man caught in the commission of a certain crime, and conveyed, &c.

Hunnius and some others, to secure Antichrist to the pope (notwithstanding that this latter seemed excluded by not being of the tribe of Dan), have broke in upon the unity of Antichrist, and assert that there is to be both an eastern and a western Antichrist.

Father Malvenda, a Jesuit, hath published a large work intitled *Antichristo*, in which this subject is amply discussed. It consists of thirteen books. In the first he relates all the opinions of the fathers with regard to Antichrist. In the second, he speaks of the times when he shall appear; and shows, that all the fathers who supposed Antichrist to be near at hand, judged the world was near its period. In the third, he discourses of his origin and nation; and shows that he is to be a Jew, of the tribe of Dan: this he founds on the authority of the fathers; on the passage in Genesis xlix. 17. *Dan shall be a serpent by the way*, &c.; on that of Jeremy viii. 16. where it is said, *The armies of Dan shall devour the earth*; and on Rev. vii. where St John, enumerating all the tribes of Israel, makes no mention of that of Dan. In the fourth and fifth books he treats of the signs of Antichrist. In the sixth, of his reign and wars. In the seventh, of his vices. In the eighth, of his doctrine and miracles. In the ninth, of his persecutions: and in the rest, of the coming of Enoch and Elias, the conversion of the Jews, the reign of Jesus Christ, and the death of Antichrist, after he has reigned three years and an half. See also *Lowman on the Revelation*.

How endless are conjectures? Some of the Jews, we are told, actually took Cromwell for the Christ; while some others have laboured to prove him Antichrist himself. Pfaffius assures us he saw a folio book in the Bodleian library, written on purpose to demonstrate this latter position.

Upon the whole, the Antichrist mentioned by the apostle John, 1. Eph. ii. 18. and more particularly described in the book of Revelation, seems evidently to be the same with the *Man of Sin*, &c. characterised by St Paul in his second Epistle to the Thessalonians, ch. ii. And the entire description literally applies to the excesses of papal power. Had the right of private judgment, says an excellent writer, been always adopted and maintained, Antichrist could never have been; and when the sacred right comes to be universally asserted,

* Bayle's Dictionary, voce *Bou rignon*.

Antichristi-
anism
||
Antidesma.

ferted, and men follow the voice of their own reason and consciences, Antichrist can be no more.

ANTICHRISTIANISM, a state or quality in persons or principles, which denominates them antichristian, or opposite to the kingdom of Christ.

M. Jurieu takes the idea of the unity of the church to have been the source of *Antichristianism*. Had not mankind been infatuated with this, they would never have stood in such awe of the anathemas of Rome. It is on this the popes erected their monarchial power.

ANTICHRISTIANS, properly denote the followers or worshippers of Antichrist.

ANTICHRISTIANS are more particularly understood of those who set up or believe a false Christ, or Messiah.

ANTICHTHONES, in ancient geography, an appellation given to the inhabitants of opposite hemispheres.

ANTICOR, or ANTICOEUR among farriers, an inflammation in a horse's throat, being the same with the quinzy in mankind. See FARRIERY, xxxvii. 2.

ANTICOSTE, a barren island lying in the mouth of the river St Laurence, in North America. W. Long. 64. 16. N. Lat. from 49. to 53.

ANTICYRA (anc. geog.), a town in Phocis, on the Corinthian bay, opposite to Cirrha, lying to the west on the same bay. The Phoceans seizing the temple of Apollo at Delphi, a war, called *the sacred*, commenced, and lasted ten years; when Philip, father of Alexander the great, avenged the god by destroying many of the cities of the pillagers. Anticyra was one of the number. It was again taken and subverted by Atilius a Roman general in the war with the Macedonians. It afterwards became famous for its hellebore. That drug was the root of a plant, the chief produce of the rocky mountains above the city, and of two kinds; the black, which had a purgative quality; and the white, which was an emetic. Sick persons resorted to Anticyra to take the medicine, which was prepared there by a peculiar and very excellent recipe: Hence the adage, *Naviget Anticyram*, (Flor.) By the port in the second century was a temple of Neptune, not large, built with selected stones, and the inside white-washed; the statue of brass. The agora or market-place was adorned with images of the same metal; and above it was a well with a spring, sheltered from the sun by a roof supported by columns. A little higher was a monument formed with such stones as occurred, and designed, it was said, for the son of Iphitus. One of these, Schedius, was killed by Hector, while fighting for the body of Patroclus, but his bones were transported to Anticyra; where his brother died after his return from Troy. About two stadia or a quarter of a mile distant was a high rock, a portion of the mountain, on which a temple of Diana stood, the image bigger than a large woman, and made by Praxitelles. The walls and other edifices at Anticyra were probably erected, like the temple of Neptune, with stones or pebbles. The site is now called *Asprospitia*, or *The White Houses*; and some traces of the buildings from which it was so named remain. The port is landlocked, and frequented by vessels for corn. Some paces up from the sea is a fountain.

ANTIDESMA, in botany: A genus of the dicæcia order, belonging to the pentandria class of plants. The

calyx of the male is five-leav'd; there is no corolla; the *antheræ* are bifid: The female *calyx* is five-leav'd; the corolla is wanting; the *stigmata* are five: the *berry* is cylindric and one-seeded. There is but one species, the *alexiteria*, a native of India.

Antidico-
marianites
||
Antigones.

ANTIDICOMARIANITES, ancient heretics, who pretended that the holy virgin did not preserve a perpetual virginity, but that she had several children by Joseph after our Saviour's birth.—Their opinion was grounded on some expressions of our Saviour, wherein he mentions his brothers and his sisters; and of St Matthew, where he says, that Joseph knew not Mary till she had brought forth her first-born son. The Antidicomarianites were the disciples of Helvidius and Jovinian, who appeared in Rome toward the close of the fourth century.

ANTIDORON, in ecclesiastical writers, a name given by the Greeks to the consecrated bread, out of which the middle part, marked with the cross, wherein the consecration resides, being taken away by the priest, the remainder is distributed after mass to the poor. On the sides of the antidoron are impressed the words *Iesus Christus vicit*. The word is formed from *δωρον*, *donum*, "a gift," as being given away *loco muneris*, or in charity. The antidoron is also called *panis præsanctificatus*. Some suppose the antidoron to be distributed in lieu of the sacrament, to such as were prevented from attending in person at the celebration; and thence derive the origin of the word, the eucharist being denominated *doron*, "gift," by way of eminence.

ANTIDOSIS, in antiquity, denotes an exchange of estates, practised by the Greeks on certain occasions with peculiar ceremonies, and first instituted by Solon.

When a person was nominated to an office, the expence of which he was not able to support, he had recourse to the antidosis; that is, he was to seek some other citizen of better substance than himself, who was free from this, and other offices; in which case the former was excused. In case the person thus substituted denied himself to be the richest, they were to exchange estates, after this manner: the doors of their houses were close shut up and sealed, that nothing might be conveyed away; then both took an oath to make a faithful discovery of all their effects, except what lay in the silver-mines, which by the laws was excused from all imposts; accordingly, within three days, a full discovery and exchange of estates was made.

ANTIDOTE, among physicians, a remedy taken to prevent, or to cure, the effects of poison, &c.

ANTIEN, See ANCIENT.

ANTIGONEA, or ANTIGONIA (anc. geog.), a town of Bithynia, so called from Antigonus, the son of Philip, and afterwards called *Nicea* (Strabo, Stephanus.) Another of Epirus, to the north of the Montes Ceraunii, opposite to the city of Oricum (Pölybius, Ptolemy.) A third of Arcadia, namely *Man-tinea*, so called in honour of king Antigonus (Plutarch, Pausanias.) A fourth in Macedonia, in the territory of Mygdonia (Pliny, Ptolemy.) A fifth in the territory of Chalcidice, in Macedonia, on the east side of the Sinus Thermaicus (Livy.) A sixth of Syria, built by Antigonus, not far from Antioch, on the Orontes (Stephanus); but soon after destroyed by Seleucus.

Antigonus
||
Antigua.

Seleucus, who removed the inhabitants to Seleucia, a town built by him (Diodorus Siculus.) A seventh of Troas, called Alexandria in Pliny's time.

ANTIGONUS, one of Alexander's commanders, to whom Asia fell. He conquered Eumenes, and expelled Seleucus out of Syria; who flying to Ptolemy Lagus in Egypt, a bloody war commenced betwixt him, Cassander, and Antigonus, wherein, by the help of his son Demetrius, Antigonus prevailed, and built the city Antigonía, anno Romæ 448. Afterward Cassander, Seleucus, and Lyfimachus, uniting against him, routed him, in league with king Pyrrhus, and slew him near Epirus, 301 years before Christ.

ANTIGONUS, king of the Jews, was the son of Aristobulus. He entered into an alliance with the king of the Parthians, and besieged Jerusalem. He cut off his uncle Hircanus's ears, to incapacitate him for the high-priesthood; and put Josephus, Herod's brother, to death. At length, Herod took him and sent him to M. Anthony; who, to gratify Herod, cut off his head, and thereby extinguished the Asmonians, who had reigned 126 years. This happened 36 years before Christ.

ANTIGRAPHUS, in antiquity, an officer of Athens, who kept a counterpart of the apodecti, or chief treasurer's accounts, to prevent mistakes, and keep them from being falsified.

ANTIGRAPHUS is also used, in middle-age writers, for a secretary or chancellor. He is thus called, according to the old glossarists, on account of his writing answers to the letters sent to his master. The antigraphus is sometimes also called *archigraphus*; and his dignity *antigraphia*, or *archigraphia*.

ANTIGRAPHUS is also used in Isidorus for one of the notes of sentences which is placed with a dote to denote a diversity of sense in translations.

ANTIGRAPHUS is also applied in ecclesiastical writers to an abbreviator of the papal letters. In which sense the word is used by pope Gregory the Great in his register. Of late days the office of antigraphus consists in making minutes of bulls from the petitions agreed to by his holiness, and renewing the bulls after engrossing.

ANTIGUA, one of the Antilles or Caribbee islands, situated 20 leagues east of St Christophers, in W. Long. 62. 5. and N. Lat. 17. 30. It is about 50 miles in circumference, and is reckoned the largest of all the British leeward islands.

This island having no rivers, and but few springs, or such as are brackish, the inhabitants are obliged to preserve the rain-water in cisterns. The air here is not so wholesome as in the neighbouring islands, and it is more subject to hurricanes; but it has excellent harbours, particularly English Harbour, which is capable of receiving the largest man of war in the navy. Here is also a dock-yard, supplied with all stores and conveniences for repairing and careening ships. The principal trade, however, is carried on in the harbour of St John's, the capital, situated in the north-west part of the island, and which has water sufficiently deep for merchant vessels. The town of St John's was once in a very flourishing condition, as may be judged by the loss sustained at the late fire, which was computed at the amazing sum of L. 400,000.

This island was first attempted to be settled by Sir

Thomas Warner, about the same time with St Christophers and Nevis: but no establishment then took place. It was afterwards granted by Charles II. to Lord Willoughby then governor of Barbadoes, who settled a colony upon it in the space of a few years. In a short time, but by what means is not evident, it became again the public property. It raises at present about 16,000 hogheads of sugar, which was at first of a very bad quality, unfit for the English market; but the planters have greatly improved their staple since, and it is now as good as in any of the other islands. It has continued unmolested in all the late wars with France. The number of white inhabitants is reckoned about 10,000. It is divided into five parishes; that of St John's-town, which is reckoned the capital of the north-west part, and consists of above 200 houses; those of Falmouth, Porham, and Bridgetown, on the south side; and St Peters, which is no town, but lies almost in the middle of the island.

ANTIGUGLER, is a crooked tube of metal, so bent as easily to be introduced into the necks of bottles, and used in decanting liquors, without disturbing them. For this purpose the bottle should be a little inclined, and about half a spoonful of the liquor poured out, so as to admit an equal quantity of air; let one end of the bent tube be stopped with the finger, whilst the other is thrust into the body of the liquor near to the bubble of air already admitted. When the finger is taken off, the bottle will have vent, and the liquor will run out steadily and undisturbed.

ANTIHECTICS, in pharmacy, medicines good in hectic disorders.

ANTIHECTICUM POTERII, the name of a medicine formerly much celebrated, but now laid aside in common practice.

ANTILIBANUS (anc. geog.), a mountain of Cœlesyria, which bounds it on the south, running parallel with Libanus: they both begin a little above the sea, Libanus near Tripolis, Antilibanus at Sidon: and both terminate near the mountains of Arabia, which run to the north of Damascus, and the mountains of Traconitis, and there end in other mountains, (Strabo.) The Scripture making no distinction between Libanus and Antilibanus, calls them by the common name *Lebanon*.

ANTILLES, the French name for the CARIBBEE islands.

ANTILOGARITHM, the complement of the logarithm of a sine, tangent, or secant; or the difference of that logarithm from the logarithm of 90 degrees.

ANTILOGY, in matters of literature, an inconsistency between two or more passages of the same book.

ANTILOPE. See CAPRA.

ANTIMENSIUM, a kind of consecrated tablecloth, occasionally used in the Greek church, in places where there is no proper altar. F. Goar observes, that in regard the Greeks had but few consecrated churches, and that consecrated altars are not things easy to be removed; that church has, for many ages, made use of certain consecrated stuffs or linens, called *antimensia*, to serve the purposes thereof.

ANTIMENSIUM, in the Greek church, answers to the *altare portabile*, or portable altar in the Latin church. They are both only of late invention, though Habertus

Antigugler
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Antimensium.

Antimensia Habertus would have them as old as St Basil. But Durant and Bona do not pretend to find them in any author before the time of Bede and Charlemagne.

Antimony.

ANTIMENSIA is also applied to other tables, used in offices of religion, besides those whereon the eucharist is administered: such, *e. g.* are those whereon the host is exposed, &c. The origin of the *antimensia* is described by Meursius; when the bishop had consecrated a church, the cloth which had been spread on the ground and over the communion table, was torn in pieces, and distributed among the priests, who carried each a fragment away, to serve to cover the tables in their churches and chapels. Not that it was necessary that such cloths should be laid on all tables; but only on those which either were not consecrated, or at least whose consecration was doubted of.

ANTIMERIA, in grammar, a figure whereby one part of speech is used for another: *e. g.* *velle suam cuique est*, for *voluntas sua cuique est*; also, *populus late rex*, for *populus late regnans*.

ANTIMERIA, in a more restrained sense, is a figure where the noun is repeated instead of the pronoun. The *antimeria* is frequent in the Hebrew, and is sometimes retained in our version of the Old Testament accordingly: *e. g.* *Hear my voice, ye wives of Lamech, for my wives*, Gen. iv. 23.

ANTIMETABOLE, in rhetoric, a figure which sets two things in opposition to each other. The word is Greek, compounded of *αντι* *against*, and *μεταβολη* from *μεταβαλλω*, I *shift* or *transfer*, *i. e.* a shifting, or setting two things over-against each other. This figure is twice exemplified in an apophthegm of Musonius; which, on account of its excellence, is called *aurum monitum*, the golden maxim or precept.

Αν τι πράξης καλον μετα πονη, ο μιν πονος οι χιται, το δε καλον μινει.

Αν τι ποιοισης αισ χρον μετα ηδονης, το μιν ηδουοι χιται, το δε αισ χρον μινει.

In English thus:

“Allowing the performance of an honourable action to be attended with labour; the labour is soon over, but the honour immortal: whereas, should even pleasure wait on the commission of what is dishonourable, the pleasure is soon gone, but the dishonour eternal.”

ANTIMETATHESIS, in rhetoric, is the inversion of the parts or members of an *Antithesis*. Such is that of Cicero, in *Verrem*, lib. iv. cap. 52. “Compare this peace with that war; the arrival of this governor with the victory of that general; his profligate troops with the invincible army of the other; the luxury of the former with the temperance of the latter: you will say, that Syracuse was founded by him who took it; and taken by him, who held it when founded.”

ANTIMONARCHICAL, an appellation given to whatever opposes monarchical government.

ANTIMONIALS, in medicine, preparations of antimony. See *PHARMACY*.

ANTIMONY, a blackish mineral substance, staining the hands, full of long, shining, needle-like striz, hard, brittle, and considerably heavy. It is found in different parts of Europe, as Bohemia, Saxony, Transylvania, Hungary, France, and England; commonly in mines by itself, intermixed with earth and stony matters. Sometimes it is blended with the richer ores of

silver, and renders the extraction of that metal difficult by volatilizing a part of the silver; or, in the language of the the miners, *robbing the ore*. See *METALLURGY* for the different operations.

Antimony is the *stibium* of the ancients; by the Greeks called *σιμμι*. The reason of its modern denomination, *antimony*, is usually referred to Basil Valentine a German monk, who, as the tradition relates, having thrown some of it to the hogs, observed, that, after purging them violently, they immediately grew fat upon it. This made him think, that, by giving his fellow-monks a like dose, they would be the better for it. The experiment, however, succeeded so ill, that they all died of it; and the medicine thenceforward was called *antimony*, *q. d.* *anti-monk*.

Uses. Antimony at first was of service only in the composition of paint. Scripture describes it to us as a sort of paint, with which the women blackened their eye-brows. Jezebel, understanding that Jehu was to enter Samaria, painted her eyes with antimony; or, according to the Hebrew, “put her eyes in antimony.” As large black eyes were thought the finest, they of both sexes, who were careful of their beauty, rubbed their eyes, eye-lids, and round the eyes, with a needle dipped in a box of paint made of antimony, with a design of blackening them.—At this day, the women of Syria, Arabia, and Babylonia, anoint and blacken themselves about the eyes; and both men and women put black upon their eyes in the desert, to preserve them from the heat of the sun and the piercing of its rays. Mr Darvieux tells us, that the Arabian women border their eyes with a black colour made of tutty, which the Arabians call *rebel*. They draw a line of this kind of blacking without the corner of their eyes, to make them appear larger. Isaiah, in his enumeration of the several ornaments belonging to the daughters of Sion, has not forgot the needles which they made use of in painting their eyes and eye-lids. Nor has this practice escaped the lash of Juvenal:

*Ille supercilium madida fuligine tinctum
Obliqua producit acu, pingitque tremantes
Attollens oculos.*

Ezekiel, discovering the irregularities of the Jewish nation under the idea of a debauched woman, says, that she bathed and perfumed herself, and that she anointed her eyes with antimony. Job shows sufficiently how much antimony was in esteem, by calling one of his daughters a vessel of antimony, or a box to put paint in, *cornu stibii*. The author of the book of Enoch says, that before the deluge the angel Azazel taught young women the art of painting themselves.

Tertullian and St Cyprian have declaimed very warmly against this custom of painting their eyes and eye-brows, which was much practised in Africa even by the men: *Inunge oculos tuos non stibio diaboli, sed cellyrio Christi*, says St Cyprian. Pliny, speaking of the Roman ladies, says, that they painted their very eyes: *Tanta est decoris affectatio, ut tingantur oculi quoque*. Sardanapalus painted his eyes and eye-brows. Josephus reproaches the seditious with the same, who assumed the name of zealots, and made themselves masters of the temple of Jerusalem.

The modern uses of antimony are very numerous and important. It is a common ingredient in specula or

Antimony or burning concaves, serving to give the composition a finer texture. It makes a part in bell metal, and renders the sound more clear. It is mingled with tin, to make it more hard, white, and sounding; and with lead, in the casting of printers letters, to render them more smooth and firm. It is also a general help in the melting of metals, and especially in the casting of cannon balls. It is likewise made use of for purifying and heightening the colour of gold. See **CHEMISTRY**, **GOLD PURIFICATION**, &c.

For a long time this mineral was esteemed poisonous. In 1566, its use was prohibited in France by an edict of parliament; and in 1609, one Besnier was expelled the faculty for having given it. The edict was repealed in 1650; antimony having a few years before been received into the number of purgatives. In 1668, a new edict came forth, forbidding its use by any but doctors of the faculty.—It is now universally allowed, that pure antimony in its crude state has no noxious quality; and that though many of its preparations are most virulently emetic and cathartic, yet, by a slight alteration or addition, they lose their virulence, and become mild in their operation. See **CHEMISTRY** and **PHARMACY**.

The virtues of antimony in the diseases of animals are greatly extolled. Pigs that have the measles are at all times recovered by it, which proves it a great purifier of the blood. Horses who have running heels that cannot be cured by the common methods used by the farriers, will generally be cured by this medicine in a little time. The manner of using it is this: Mix one dram with every feeding of oats which the horse has in a morning. It is best put together in one place, buried under a few oats; and the horse's head being with-held a little, and then let go just against that place, he will take it all in at a mouthful. Some horses do not dislike it; others obstinately refuse it, but to these it may be easily given in balls. The virtues of this drug in fattening of cattle has been thought imaginary, but experiment proves it to be a real truth. A horse that is lean and scabby, and not to be fatted by any other means, will become fat on taking a dose of antimony every morning for two months together. A boar fed for brawn, and having an ounce of antimony given him every morning, will become fat a fortnight sooner than others put into the sty at the same time, and fed in the same manner, but without the antimony.

ANTINOE. See **ENFINE**.

ANTINOEIA, in antiquity, annual sacrifices, and quinquennial games, in memory of Antinous the Bithynian. They were instituted at the command of Adrian the Roman emperor, at Mantinea in Arcadia, where Antinous was honoured with a temple and divine worship.

ANTINOMIANS, in ecclesiastical history, certain heretics who maintain the law of no use or obligation under the gospel-dispensation, or who hold doctrines that clearly supercede the necessity of good works and a virtuous life. The Antinomians took their origin from John Agricola about the year 1538; who taught, that the law is no ways necessary under the gospel; that good works do not promote our salvation, nor ill ones hinder it; that repentance is not to be

preached from the decalogue, but only from the gospel.

This sect sprung up in England during the protectorate of Oliver Cromwell, and extended their system of libertinism much farther than Agricola the disciple of Luther. Some of their teachers expressly maintained, that as the elect cannot fall from grace, nor forfeit the Divine favour, the wicked actions they commit are not really sinful, nor are to be considered as instances of their violation of the divine law; and that consequently they have no occasion either to confess their sins, or to break them off by repentance. According to them, it is one of the essential and distinctive characters of the elect, that they cannot do any thing which is either displeasing to God or prohibited by the law.—Luther, Rutherford, Schlusselfburg, Sedgwick, Gataker, Winsius, Bull, Williams, &c. have written refutations; Crisp, Richardson, Saltmarsh, &c. defences, of the Antinomians; Wigandus, a comparison between ancient and modern Antinomians.

The doctrine of Agricola was in itself obscure, and perhaps represented worse than it really was by Luther, who wrote with acrimony against him, and first styled him and his followers *Antinomians*. Agricola stood on his own defence, and complained that opinions were imputed to him which he did not hold. Nicholas Amstdorf fell under the same odious name and imputation, and seems to have been treated more unfairly than even Agricola himself. It is rather hard to charge upon a man all the opinions that may be inferred from things that have hastily dropped from him, when he himself disavows such inferences.

ANTINOUS, the favourite of Adrian, was born at Bithynus in Bithynia. His beauty engaged the heart of Adrian in such a manner, that there never was a more boundless and extravagant passion than that of this emperor towards this youth. After his death, the emperor ordered divine honours to be paid him; and he also erected a city of his name. See **ENFINE**.

ANTIOCH, a city of Syria in Asia, situated on the river Orontes, in E. Long. 37. 5. N. Lat. 36. 20. It was built by Seleucus Nicator, founder of the Syro-Macedonian empire, who made it his capital. It stood on the above-mentioned river, about 20 miles from the place where it empties itself into the Mediterranean; being equally distant from Constantinople and Alexandria in Egypt, that is, about 700 miles from each. Seleucus called it *Antioch*, from his father's name, according to some; or from that of his son, according to others. He built 16 other cities bearing the same name; of which one, situated in Pisidia, is probably that where the name of *Christians* was first given to the followers of Jesus Christ. But that situated on the Orontes, by far eclipsed, not only all the others of this name, but all the cities built by Seleucus. Antigonos, not long before, had founded a city in that neighbourhood, which from his own name he had called *Antigonia*, and designed it for the capital of his empire; but it was rased to the ground by Seleucus, who employed the materials in building his metropolis, and also transplanted the inhabitants thither.

The city of Antioch was afterwards known by the name of *Tetrapolis*, being divided as it were into four cities, each of them being surrounded with its proper wall,

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Antioch. wall, besides a common one which inclosed them all. The first of these cities was built by Seleucus Nicator, as already mentioned; the second by those who flock-
ed thither on its being made the capital of the Syro-Macedonian empire; the third by Seleucus Callinicus; and the fourth by Antiochus Epiphanes.—About four or five miles distant, stood a place called *Daphne*, which was nevertheless reckoned a suburb of Antioch. Here Seleucus planted a grove, and in the middle of it built a temple which he consecrated to Apollo and Diana, making the whole an asylum. To this place the inhabitants of Antioch resorted for their pleasures and diversions; whereby it became at last so infamous, that “to live after the manner of *Daphne*” was used as a proverb to express the most voluptuous and dissolute way of living. Here Lucius Verus, the colleague of M. Aurelius, chose to take up his residence, instead of marching against the Parthians; while his general Cassius forbade by proclamation any of his soldiers to enter or even go near the place. In short, so remarkable was *Daphne* of old, that the metropolis itself was distinguished by it, and called *Antioch near Daphne*.

Though Antioch continued to be, as Pliny calls it, the queen of the East, for near 1600 years; yet scarce any city mentioned in history hath undergone such calamities, both from the attacks of its enemies, and its being naturally subjected to earthquakes.—The first disaster mentioned in history which befel the Antiochians happened about 145 years before Christ. Being at that time very much disaffected to the person and government of Demetrius their king, they were continually raising tumults and seditions; insomuch that he found himself at last obliged to solicit assistance from the Jews; and was furnished by Jonathan, one of the Maccabees, with 3000 men; by which reinforcement, believing himself sufficiently strong to reduce the mutineers by force, he ordered them immediately to deliver up their arms. This unexpected order caused a great uproar in the city. The inhabitants ran to arms, and invested the king's palace, to the number of 120,000, with a design to put him to death. All the Jews hastened to his relief, fell upon the rebels, killed 100,000 of them, and set fire to the city. On the destruction of the Syrian empire by the Romans, Antioch submitted to them as well as the other cities of that kingdom, and continued for a long time under their dominion. About the year 115, in the reign of the emperor Trajan, it was almost entirely ruined by one of the most dreadful earthquakes mentioned in history. Trajan himself happened to be there at that time, being returned from an expedition against the Parthians; so that the city was then full of troops, and strangers come from all quarters either out of curiosity or upon business and embassies: the calamity was by this means felt almost in every province of the Roman empire. The earthquake was preceded by violent claps of thunder, unusual winds, and a dreadful noise under ground. The shock was so terrible, that great numbers of houses were overturned, and others tossed to and fro like a ship at sea. Those who happened to be in their houses were for the most part buried under their ruins: those who were walking in the streets or in the squares, were, by the violence of the shock, dashed against each other, and most of them either killed or dangerously wounded. This earthquake

continued, with some small intermission, for many days and nights; so that vast numbers perished. The most violent shock, according to the Acts of St Ignatius, was on a Sunday, December 23. By this Trajan was much hurt, but escaped through a window. Dio Cassius pretends, that he was taken out of the window by one who exceeded the human size in tallness. The same historian adds, that mount *Lison*, which stood at a small distance from the city, bowed with its head and threatened to fall down upon it; that other mountains fell; that new rivers appeared, and others that had flowed before forsook their course and vanished. When the earthquake ceased, a woman was heard crying under the ruins; which being immediately removed, she was found with a living child in her arms. Search was made for others; but none was found alive, except one child, which continued sucking its dead mother.

No doubt, Trajan, who was an eye witness of this terrible calamity, would contribute largely towards the re-establishment of Antioch in its ancient splendor. Its good fortune, however, did not continue long; for in 155, it was almost entirely burnt by accidental fire; when it was again restored by Antoninus Pius. In 176 or 177, the inhabitants having sided with Cassius, the abovementioned Roman general, who had revolted from M. Aurelius, that emperor published a severe edict against them, deprived them of all their privileges, suppressed their public assemblies, and took from them the shows and spectacles to which they were greatly addicted: but his anger being soon appeased, he restored them to their former condition, and even condescended to visit their city. In 194, having sided with Niger against Severus, the latter deprived them of all their privileges, and subjected Antioch as a mere village to *Laodicea*; but, however, pardoned them the next year, at the intreaties of his eldest son, then a child.

When the power of the Roman empire began to decline, Antioch became the bone of contention between them and the eastern nations; and accordingly, on the breaking out of a Persian war, it was almost always sure to suffer. In 242, it was taken and plundered by Sapor; and, though he was defeated by Gordian, it underwent the same misfortune in the time of Valerian, about 18 years after; and after the defeat and captivity of Valerian, being taken by the Persian monarch a third time, he not only plundered it, but levelled all the public buildings with the ground. The Persians, however, being soon driven out, this unfortunate city continued free from any remarkable calamity till about the time of the division of the Roman empire by Constantine in 331. It was then afflicted with so grievous a famine, that a bushel of wheat was sold for 400 pieces of silver. During this grievous distress, Constantine sent to the bishop 30,000 bushels of corn; besides an incredible quantity of all kinds of provisions, to be distributed among the ecclesiastics, widows, orphans, &c. In the year 347, Constantine II. caused an harbour to be made at *Seleucia*, for the conveniency of Antioch. This was effected at an immense expence, the mouth of the *Orontes*, where the port was made, being full of sands and rocks. When the emperor Julian set out on his expedition against the Persians, he made a long stay at Antioch; during which time, many of the Roman provinces were afflicted with a famine, but which raged more violently at Antioch than in other places.

The

Antioch.

The ecclesiastical writers of those times say, that this famine followed Julian from place to place; and as he continued longer at Antioch than any other city, it raged more violently there than any where else. To remedy this evil, Julian fixed the prices of corn: by which means the famine was greatly increased, the merchants conveying their corn privately to other places, so that this metropolis was reduced to a most deplorable situation. In 381, in the reign of Theodosius the Great, Antioch was again visited by a famine, accompanied by a grievous plague. The latter soon ceased: but, the famine still continuing, the bishop, Libanius, applied to Icarius, count of the East, requesting him by some means or other to relieve the poor, who had flocked from all parts to the metropolis, and were daily perishing in great numbers; but to this Icarius gave no other answer, than that they were abhorred and justly punished by the gods. This inhuman answer raised great disturbances; which, however, were terminated without bloodshed. In 387, Theodosius finding his exchequer quite drained, and being obliged to be at an extraordinary expence in celebrating the fifth year of the reign of his son Arcadius, and the tenth of his own, an extraordinary tax was laid upon all the people in the empire. Most of the cities submitted willingly to this: but the people of Antioch, complaining of it as an unreasonable oppression, crowded to the house of Flavianus their bishop, as soon as the edict was published, to implore his protection. Being unable to find him, they returned to the forum; and would have torn the governor in pieces, had not the officers who attended him kept back with great difficulty the enraged multitude, till he made his escape. Upon this, they broke some of the emperor's statues, and dragged others through the city, uttering the most injurious and abusive expressions against him and his whole family. They were however, dispersed by a body of archers, who, by wounding only two of the rabble, struck terror into all the rest. The governor proceeded against the offenders with the utmost cruelty; exposing some to wild beasts in the theatre, and burning others alive. He did not spare even the children, who had insulted the emperor's statues; and caused several persons to be executed, who had been only spectators of the disorder. In the mean time a report was spread, that a body of troops was at hand, with orders to plunder the city, and put all to the sword, without distinction of sex or age; upon which the citizens abandoned their dwellings in the utmost terror and confusion, retiring to the neighbouring mountains with their wives and families. As the report proved groundless, some of them returned; but the greater part dreading the cruelty of the governor, and the displeasure of the emperor, continued in their retreats. To those who returned, St Chrysostom preached some homilies, which have reached our times, and are greatly admired; and which are said by St Chrysostom himself, as well as some cotemporary writers, to have had a considerable effect in reforming the lives of this licentious and dissolute people. On hearing the news of this tumult, Theodosius was so much enraged, that he commanded the city to be destroyed, and its inhabitants to be put to the sword without distinction; but this order was revoked before it could be put into execution, and he contented himself with a punishment similar to that inflicted by Severus above-mentioned.

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He appointed judges to punish the offenders; who proceeded with such severity, and condemned such numbers, that the city was thrown into the utmost consternation. On this occasion, St Chrysostom and the hermits, who were very numerous in the neighbourhood, exerted all their eloquence in behalf of the unhappy people, and obtained a respite for those who had been condemned. They next proceeded to draw up a memorial to the emperor in favour of the citizens in general; and being joined by Flavianus, at last obtained a general pardon, and had the city restored to all its former privileges.

In the year 458, Antioch was almost entirely ruined by an earthquake, which happened on the 14th of September; scarce a single house being left standing in the most beautiful quarter of the city. The like misfortune it experienced in 525, during the reign of the emperor Justin; and 15 years after, being taken by Cosroes king of Persia, that insulting and haughty monarch gave it up to his soldiers, who put all they met to the sword. The king himself seized on all the gold and silver vessels belonging to the great church; and caused all the valuable statues, pictures, &c. to be taken down and conveyed to Persia, while his soldiers carried off every thing else. The city being thus completely plundered, Cosroes ordered his men to set fire to it; which was accordingly done so effectually, that none of the buildings even without the walls escaped. Such of the inhabitants as escaped slaughter were carried into Persia, and sold as slaves.

Notwithstanding so many and so great calamities, the city of Antioch soon recovered its wonted splendor; but in a short time underwent its usual fate, being almost entirely destroyed by an earthquake in 587, by which 30,000 persons lost their lives. In 634, it fell into the hands of the Saracens, who kept possession of it till the year 858, when it was surprised by one Burtzas, and again annexed to the Roman empire. The Romans continued masters of it for some time, till the civil dissensions in the empire gave the Turks an opportunity of seizing upon it as well as the whole kingdom of Syria. From them it was again taken by the Crusaders in 1098. In 1262, it was taken by Bibaris sultan of Egypt, who put a final period to its glory.

Antioch is now no more than a ruinous town, whose houses, built with mud and straw, and narrow and miry streets, exhibit every appearance of misery and wretchedness. These houses are situated on the southern bank of the Orontes, at the extremity of an old decayed bridge: they are covered to the south by a mountain; upon the slope of which is a wall, built by the Crusaders. The distance between the present town and this mountain may be about 400 yards, which space is occupied by gardens and heaps of rubbish, but presents nothing interesting.

Notwithstanding the unpolished manners of its inhabitants, Antioch was better calculated than Aleppo to be the emporium of the Europeans. By clearing the mouth of the Orontes, which is six leagues lower down, boats might have been towed up that river, though they could not have sailed up, as Pococke has asserted; its current is too rapid. The natives, who never knew the name Orontes, call it, on account of the swiftness of its stream, *El-aasi*, that is, the rebel. Its breadth, at Antioch, is about forty paces. Seven

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leagues above that town it passes by a lake abounding in fish, and especially in eels. A great quantity of these are salted every year, but not sufficient for the numerous fasts of the Greek Christians. It is to be remembered, we no longer hear at Antioch, either of the Grove, or Daphne, or of the voluptuous scenes of which it was the theatre.

The plain of Antioch, though the soil of it is excellent, is uncultivated, and abandoned to the Turcomans; but the hills on the side of the Orontes, particularly opposite Serkin, abound in plantations of figs and olives, vines, and mulberry-trees, which, a thing uncommon in Turkey, are planted in quincunx, and exhibit a landscape worthy our finest provinces.

Seleucus Nicator, who founded Antioch, built also at the mouth of the Orontes, on the northern bank, a large and well fortified city, which bore his name, but of which at present not a single habitation remains: nothing is to be seen but heaps of rubbish, and works in the adjacent rock, which prove that this was once a place of very considerable importance. In the sea also may be perceived the traces of two piers, which are indications of an ancient port, now choked up. The inhabitants of the country go thither to fish, and call the name of the place *Souaidia*.

ANTIOCHETTA, a town of Turkey in Asia, in Carimania, with a bishop's see, over against the island of Cypros. E. Long. 32. 15. N. Lat. 36. 42.

ANTIOCHIA (anc. geog.), a town of Assyria, situated between the rivers Tigris and Tornadotus (Pliny).—Another of Caria, on the Meander; called also *Pythopolis*, *Athymbra*, and *Nysa*, or *Nysa* (Stephanus): but Strabo says, that Nysa was near Tralles.—A third of Celicia Trachea, on mount Cragus (Ptolemy).—A fourth, called *Epidaphnes*, the capital of Syria, distinguished from cities of the same name, either by its situation on the Orontes, by which it was divided, or by its proximity to Daphne (See ANTIOCH).—A fifth Antiochia, a town of Comagene, on the Euphrates (Pliny).—A sixth, of Lydia Tralles, so called (Pliny).—A seventh, of Margiana (Strabo, Pliny, Ptolemy), on the river Margus, taking its name from Antiochus, son of Seleucus, who rebuilt it, and walled it round, being before called *Alexandria*, from Alexander the founder, and surnamed Syria; in compass seventy stadia; whither Orodes carried the Romans, after the defeat of Crassus (Pliny).—An eighth, in Mesopotamia, on the lake Calirrhoe, the old name of Edeffa (Pliny).—A ninth Antiochia, on the river Mygdonius, in Mesopotamia, situate at the foot of mount Masius, and is the same with Nisibis (Strabo, Plutarch). It was the bulwark and frontier town of the Romans against the Parthians and Persians, till given up to the Persians, by Jovinian, by an ignominious peace (Ammian, Eutropius).—A tenth Antiochia, was that situate in the north of Pisidia (Luke, Ptolemy, Strabo): it was a Roman colony, with the appellation, *Cæsarea*. There is an Antiochia at mount Taurus, mentioned by Ptolemy, but by no other author.

ANTIOCHIAN SECT or *Academy*, a name given to the fifth academy, or branch of academies. It took the denomination from its being founded by Antiochus, a philosopher contemporary with Cicero.—The Antiochian academy succeeded the Philonian. As to point

of doctrine, the philosophers of this sect appear to have restored that of the ancient academy, except that in the article of the criterion of truth. Antiochus was really a stoic, and only nominally an academic.

ANTIOCHIAN *Epocha*, a method of computing time from the proclamation of liberty granted the city of Antioch about the time of the battle of Pharsalia.

ANTIOCHUS, the name of several kings of SYRIA. See that article.

ANTIOCHUS of *Ascalon*, a celebrated philosopher, the disciple of Philo of Larissa, the master of Cicero, and the friend of Lucullus and Brutus. He was founder of a fifth academy; but, instead of attacking other sects, he set himself down to reconcile them together, particularly the sect of the stoics with that of the ancient academy.

ANTIOPE, in fabulous history, the wife of Lycus, king of Thebes, who, being deflowered by Jupiter in the form of a satyr, brought forth Amphion and Zethus.—Another Antiope was queen of the Amazons; and, with the assistance of the Scythians, invaded the Athenians; but was vanquished by Theseus.

ANTIPÆDOBAPTISTS, (derived from *αντι*, against, *παις*, *παιδος*, child, and *βαπτισμα*, baptize, whence *βαπτισμος*), is a distinguished denomination given to those who object to the baptism of infants; because they say infants are incapable of being instructed, and of making that profession of faith which intitles them to this ordinance and an admission into church communion. See ANABAPTISTS and BAPTISTS.

ANTIPAROS, an island in the Archipelago, opposite to Paros, from which it is separated by a strait about seven miles over. It is the *Oleiros* or *Oliaros*, mentioned by Strabo, Pliny, Virgil, Ovid, &c.; and was, according to Heraclides Ponticus as quoted by Stephanus, first peopled by a Phœnician colony from Sidon.—According to Mr Tournefort's account, it is about 16 miles in circumference, produces a little wine and cotton, with as much corn as is necessary for the maintenance of 60 or 70 families, who live together in a village at one end of the island, and are mostly Maltese and French corsairs.

This island is remarkable for a subterraneous cavern or grotto, accounted one of the greatest natural curiosities in the world. It was first discovered in the last century by one Magni an Italian traveller, who has given us the following account: "Having been informed (says he) by the natives of Paros, that in the little island of Antiparos, which lies about two miles from the former, of a gigantic statue that was to be seen at the mouth of a cavern in that place, it was resolved that we (the French consul and himself) should pay it a visit. In pursuance of this resolution, after we had landed on the island, and walked about four miles through the midst of beautiful plains and sloping woodlands, we at length came to a little hill, on the side of which yawned a most horrid cavern, that with its gloom at first struck us with terror, and almost repressed curiosity. Recovering the first surprise, however, we entered boldly; and had not proceeded above 20 paces, when the supposed statue of the giant presented itself to our view. We quickly perceived, that what the ignorant natives had been terrified at as a giant, was nothing more than a sparry concretion, formed by the water dropping from the roof of the cave, and by degrees hardening

Antiochian
||
Antiparos.

Antiparos. hardening into a figure that their fears had formed into a monster. Incited by this extraordinary appearance, we were induced to proceed still farther, in quest of new adventures in this subterranean abode. As we proceeded, new wonders offered themselves: the spars, formed into trees and shrubs, presented a kind of petrified grove; some white, some green; and all receding in due perspective. They struck us with the more amazement, as we knew them to be mere productions of Nature, who, hitherto in solitude, had, in her playful moments, dressed the scene as if for her own amusement.

"But we had as yet seen but a few of the wonders of the place, and we were introduced as yet only into the portico of this amazing temple. In one corner of this half-illuminated recess, there appeared an opening of about three feet wide, which seemed to lead to a place totally dark, and that one of the natives assured us contained nothing more than a reservoir of water. Upon this we tried, by throwing down some stones, which rumbling along the sides of the descent for some time, the sound seemed at last quashed in a bed of water. In order, however, to be more certain, we sent in a Levantine mariner, who, by the promise of a good reward, with a flambeau in his hand, ventured into this narrow aperture. After continuing within it for about a quarter of an hour, he returned, carrying some beautiful pieces of white spar in his hand, which art could neither imitate nor equal. Upon being informed by him that the place was full of these beautiful incrustations, I ventured in once more with him, for about 50 paces, anxiously and cautiously descending by a steep and dangerous way. Finding, however, that we came to a precipice which led into a spacious amphitheatre, if I may so call it, still deeper than any other part, we returned; and being provided with a ladder, flambeaux, and other things to expedite our descent, our whole company, man by man, ventured into the same opening, and, descending one after another, we at last saw ourselves all together in the most magnificent part of the cavern.

"Our candles being now all lighted up, and the whole place completely illuminated, never could the eye be presented with a more glittering or a more magnificent scene. The roof all hung with solid icicles, transparent as glass, yet solid as marble. The eye could scarce reach the lofty and noble ceiling; the sides were regularly formed with spars; and the whole presented the idea of a magnificent theatre, illuminated with an immense profusion of lights. The floor consisted of solid marble; and in several places, magnificent columns, thrones, altars, and other objects, appeared, as if nature had designed to mock the curiosities of art. Our voices, upon speaking or singing, were redoubled to an astonishing loudness; and, upon the firing of a gun, the noise and reverberations were almost deafening. In the midst of this grand amphitheatre rose a concretion of about 15 feet high, that, in some measure, resembled an altar; from which, taking the hint, we caused mass to be celebrated there. The beautiful columns that shot up round the altar, appeared like candlesticks; and many other natural objects represented the customary ornaments of this sacrament.

"Below even this spacious grotto, there seemed another cavern; down which I ventured with my former

mariner, and descended about 50 paces by means of a rope. I at last arrived at a small spot of level ground where the bottom appeared different from that of the amphitheatre, being composed of soft clay, yielding to the pressure, and in which I thrust a stick to about six feet deep. In this, however, as above, numbers of the most beautiful crystals were formed; one of which, particularly, resembled a table. Upon our egress from this amazing cavern, we perceived a Greek inscription upon a rock at the mouth; but so obliterated by time, that we could not read it. It seemed to import, that one Antipater, in the time of Alexander, had come thither; but whether he penetrated into the depths of the cavern, he does not think fit to inform us."

From this account Mr Tournefort's differs considerably. Mr Magni mentions only one descent or precipice from the entry of the cave to the grotto, or most magnificent part: Mr Tournefort says that there were many very dangerous precipices and rugged ways, through which they were obliged to pass sometimes on their back, and sometimes on their belly; but gives no particular account of his journey till he comes to the grand cavern. This indeed he describes very pompously; but as by it he evidently wants to support a favourite hypothesis, namely, the vegetation of stones, perhaps the particulars are not altogether to be depended upon. He informs us, that, at the entry into the cavern, he met with a Greek inscription almost defaced, containing a good number of proper names; and that there was a tradition among the inhabitants, that these were the names of some who had conspired against Alexander the Great, and having missed their aim, had taken refuge in this grotto.

The most particular account, however, of this famous grotto that hath hitherto been published, appeared in the British magazine, in a letter signed *Charles Saunders*, and dated Feb. 24th, 1746-7; which, as it is very particular, and seems to bear sufficient marks of authenticity, we shall here insert. "Its entrance lies in the side of a rock, about two miles from the sea-shore; and is a spacious and very large arch, formed of rough craggy rocks, overhung with brambles and a great many climbing plants, that give it a gloominess which is very awful and agreeable. Our surgeon, myself, and four passengers, attended by six guides with lighted torches, entered this cavern about eight o'clock in the morning, in the middle of August last. We had not gone 20 yards in this cavity when we lost all sight of day-light: but our guides going before us with lights, we entered into a low narrow kind of alley, surrounded every way with stones all glittering like diamonds by the light of our torches; the whole being covered and lined throughout with small crystals, which gave a thousand various colours by their different reflections. This alley grows lower and narrower as one goes on, till at length one can scarce get along it. At the end of this passage we were each of us presented with a rope to tie about our middles; which when we had done, our guides led us to the brink of a most horrible precipice. The descent into this was quite steep, and the place all dark and gloomy. We could see nothing, in short, but some of our guides with torches in a miserable dark place, at a vast distance below us. The dreadful depth of this place, and the horror of the descent thro' a miserable darkness into it,

Antiparos. made me look back to the lane of diamonds, if I may so call it, thro' which we had just passed; and I could not but think I was leaving heaven, to descend into the infernal regions. The hope of something fine at my journey's end, tempted me, however, to trust myself to the rope and my guides at the top, to let myself down. After about two minutes dangling in this posture, not without much pain as well as terror, I found myself safe, however, at the bottom; and our friends all soon followed the example. When we had congratulated here with one another on our safe descent; I was inquiring where the grotto, as they called it, was. Our guides, shaking their heads, told us, we had a great way to that yet; and led us forward about 30 yards under a roof of ragged rocks, in a scene of terrible darkness, and at a vast depth from the surface of the earth, to the brink of another precipice much deeper and more terrible than the former. Two of the guides went down here with their torches first; and by their light we could see, that this passage was not so perpendicular indeed as the other, but lay in a very steep slant, with a very slippery rock for the bottom; vast pieces of rough rugged rocks jutting out in many places on the right hand, in the descent, and forcing the guides sometimes to climb over, sometimes to creep under them, and sometimes to round them; and on the left, a thousand dark caverns, like so many monstrous wells, ready, if a foot should slip, to swallow them up for ever. We stood on the edge to see these people with their lights descend before us; and were amazed and terrified to see them continue descending till they seemed at a monstrous and most frightful depth. When they were at the bottom, however, they hallowed to us; and we, trembling and quaking, began to descend after them. We had not gone 30 feet down, when we came to a place where the rock was perfectly perpendicular; and a vast cavern seemed to open its mouth to swallow us up on one side, while a wall of rugged rock threatened to tear us to pieces on the other. I was quite disheartened at this terrible prospect, and declared I would go back; but our guides assured us there was no danger; and the rest of the company resolving to see the bottom now they were come so far, I would not leave them: so on we went to a corner where there was placed an old slippery and rotten ladder, which hung down close to the rock; and down this, one after another, we at length all descended. When we had got to the bottom of this we found ourselves at the entrance of another passage, which was terrible enough indeed; but in this there was not wanting something of beauty. This was a wide and gradual descent; at the entrance of which one of our guides seated himself on his breech, and began to slide down, telling us we must do the same. We could discover, by the light of his torch, that this passage was one of the noblest vaults in the world. It is about nine feet high, seven wide, and has for its bottom a fine green glossy marble. The walls and arch of the roof of this being as smooth and even in most places as if wrought by art, and made of a fine glittering red and white granite, supported here and there with columns of a deep blood-red shining porphyry, made, with the reflection of the lights, an appearance not to be conceived. This passage is at least 40 yards long; and of so steep a descent, that one has enough to do, when seated on one's

breech, not to descend too quickly. Our guides, that we *Antiparos.* kept with us, could here keep on each side of us: and, what with the prodigious grandeur and beauty of the place, our easy travelling thro' it, and the diversion of our now and then running over one another whether we would or not; this was much the pleasantest part of our journey. When we had entered this passage, I imagined we should at the bottom join the two guides we had first set down: but alas! when we were got there we found ourselves only at the mouth of another precipice, down which we descended by a second ladder not much better than the former. I could have admired this place also, would my terror have suffered me; but the dread of falling, kept all my thoughts employed during my descent. I could not but observe, however, as my companions were coming down after me, that the wall, if I may so call it, which the ladder hung by, was one mass of blood-red marble, covered with white sprigs of rock-crystal as long as my finger, and making, with the glow of the purple from behind, one continued immense sheet of amethysts. From the foot of this ladder we slid on our bellies through another shallow vault of polished green and white marble, about 20 feet: and at the bottom of this joined our guides. Here we all got together once again, and drank some rum, to give us courage before we proceeded any farther. After this short refreshment, we proceeded by a strait, but somewhat slanting passage, of a rough, hard, and somewhat coarse stone, full of a thousand strange figures of snakes rolled round, and looking as if alive; but in reality as cold and hard as the rest of the stone, and nothing but some of the stone itself in that shape. We walked pretty easily along this descent for near 200 yards; where we saw two pillars seemingly made to support the roof from falling in: but in reality it was no such thing; for they were very brittle, and made of a fine glittering yellow marble. When we had passed these about 200 yards, we found ourselves at the brink of another very terrible precipice: but this our guides assured us was the last; and there being a very good ladder to go down by, we readily ventured. At the bottom of this steep wall, as I may call it, we found ourselves for some way upon plain even ground; but, after about 40 yards walking, were presented by our guides with ropes again; which we fastened about our middles, though not to be swung down by, but only for fear of danger, as there are lakes and deep waters all the way from hence on the left hand. With this caution, however, we entered the last alley: and horrible work it was indeed to get through it. All was perfectly horrid and dismal here. The sides and roof of the passage were all of black stone; and the rocks in our way were in some places so steep, that we were forced to lie all along on our backs, and slide down; and so rough, that they cut our clothes, and bruised us miserably in passing. Over our heads, there were nothing but ragged black rocks, some of them looking as if they were every moment ready to fall in upon us; and, on our left hands, the light of our guides torches showed us continually the surfaces of dirty and miserably looking lakes of water. If I had heartily repented of my expedition often before, here I assure you I was all in a cold sweat, and fairly gave myself over for lost; heartily cursing all the travellers that had written of this place, that they had described it so as

to

Antiparos to tempt people to see it, and never told us of the horrors that lay in the way. In the midst of all these reflections, and in the very dismallest part of all the cavern, on a sudden we had lost four of our six guides. What was my terror on this sight! The place was a thousand times darker and more terrible for want of their torches; and I expected no other but every moment to follow them into some of these lakes, into which I doubted not but they were fallen. The remaining two guides said all they could, indeed, to cheer us up; and told us we should see the other four again soon, and that we were near the end of our journey. I don't know what effect this might have upon the rest of my companions; but I assure you I believed no part of the speech but the last, which I expected every moment to find fulfilled in some pond or precipice. Our passage was by this time become very narrow, and we were obliged to crawl on all-fours over rugged rocks; when in an instant, and in the midst of these melancholy apprehensions, I heard a little hissing noise, and saw myself in utter, and not to be described, darkness. Our guides called indeed cheerfully to us, and told us that they had accidentally dropped their torches into a puddle of water, but we should soon come to the rest of them, and they would light them again; and told us there was no danger, and we had nothing to do but to crawl forward. I cannot say but I was amazed at the courage of these people; who were in a place where, I thought, four of them had already perished, and from whence we could none of us ever escape; and determined to lie down and die where I was. Words cannot describe the horror, or the extreme darkness of the place. One of our guides, however, perceiving that I did not advance, came up to me, and clapping his hand firmly over my eyes, dragged me a few paces forward. While I was in this strange condition, expecting every moment death in a thousand shapes, and trembling to think what the guide meant by this rough proceeding, he lifted me at once over a great stone, set me down on my feet, and took his hand from before my eyes. What words can describe at that instant my astonishment and transport! Instead of darkness and despair, all was splendor and magnificence before me: our guides all appeared about us: the place was illuminated by 50 torches, and the guides all welcomed me into the grotto of Antiparos. The four that were first missing, I now found had only given us the slip, to get the torches lighted up before we came; and the other two had put out their lights on purpose, to make us enter out of utter darkness into this pavilion of splendor and glory. I am now come to the proper business of this letter; which was to describe this grotto. But I must confess to you that words cannot do it. The amazing beauties of the place, the eye that sees them only can conceive. The best account I can give you, however, pray accept of.

"The people told us, the depth of this place was 485 yards, the grotto, in which we now were, is a cavern of 120 yards wide, and 113 long, and seems about 60 yards high in most places. These measures differ something from the accounts travellers in general give us; but you may depend upon them as exact, for I took them with my own hand. Imagine then with yourself, an immense arch like this, almost all over lined with fine and bright chrystallized white marble, and

illuminated with 50 torches; and you will then have some faint idea of the place I had the pleasure to spend three hours in. This, however, is but a faint description of its beauties. The roof, which is a fine vaulted arch, is hung all over with icicles of white shining marble, some of them ten feet long, and as thick as one's middle at the root; and among these there hang 1000 festoons of leaves and flowers, of the same substance; but so very glittering, that there is no bearing to look up at them. The sides of the arch are planted with seeming trees of the same white marble, rising in rows one above another, and often inclosing the points of the icicles. From these trees there are also hung festoons, tied as it were from one to another in vast quantities; and in some places among them there seem rivers of marble winding through them in a thousand meanders. All these things are only made, in a long course of years, from the dropping of water, but really look like trees and brooks turned to marble. The floor we trod upon was rough and uneven, with crystals of all colours growing irregularly out of it, red, blue, green, and some of a pale yellow. These were all shaped like pieces of saltpetre; but so hard, that they cut our shoes; among these, here and there, are placed icicles of the same white shining marble with those above, and seeming to have fallen down from the roof and fixed there; only the big end of these is to the floor. To all these our guides had tied torches, two or three to a pillar, and kept continually beating them to make them burn bright. You may guess what a glare of splendor and beauty must be the effect of this illumination, among such rocks and columns of marble. All round the lower part of the sides of the arch are a thousand white masses of marble, in the shape of oak-trees. Mr Tournefort compares them to cauliflowers, but I should as soon compare them to toad-stools. In short, they are large enough to inclose, in many places, a piece of ground big enough for a bed-chamber. One of these chambers has a fair white curtain, whiter than satin, of the same marble, stretched all over the front of it. In this we all cut our names, and the date of the year, as a great many people have done before us. In a course of years afterwards, the stone blisters out like this white marble over the letters. Mr Tournefort thinks the rock grows like oaks or apple-trees for this reason; but I remember I saw some of the finest cockle and muscle shells, in the rock thereabouts, that ever I saw in my life. I wonder whether he thinks they grow there too. Besides, if this rock grows so fast, the cavern ought to be all grown up by this time; and yet, according to his measures and mine, the cavern seems on the other hand to be turned larger since. Indeed, all that I can gather from his account of this glorious place is, that he had drank a bottle or two too much before he went down into it."

ANTIPAS HEROD, or HEROD-ANTIPAS, the son of HEROD the Great, by one of his wives called Cleopatra, a native of Jerusalem. Herod the Great, in his first will, appointed Antipas his successor in the kingdom; but afterwards, altering that will, he named his son Archelaus his successor, giving to Antipas the title only of Tetrarch of Galilee and Peræa.

Antipas took a great deal of pains in adorning and fortifying the principal places of his dominions. He married the daughter of Aretas king of Arabia; whom he

Antipas,
Antipater.

he divorced about the year of Christ 33, to marry his sister-in-law Herodias, wife to his brother Philip, who was still living. St John the Baptist exclaiming continually against this incest, was taken into custody by order of Antipas, and imprisoned in the castle of Machærus, (Mat. xiv. 3, 4. Mark i. 14. vi. 17, 18. Luke iii. 19, 20.) Josephus says, that Antipas caused St John to be laid hold of, because he drew too great a concourse of people after him; and that he was afraid lest he should make use of the authority which he had acquired over the minds and affections of the people, to induce them to revolt. But the evangelists, who were better informed than Josephus, as being eye-witnesses of what passed, and acquainted in a particular manner with St John and his disciples, assure us that the true reason of imprisoning St John was, the aversion which Herod and Herodias had conceived against him for the liberty he had used in censuring their scandalous marriage. The virtue and holiness of St John were such that even Herod feared and respected him; but his passion for Herodias had prevailed with him to have killed that prophet, had he not been restrained by his apprehensions of the people, who esteemed John the Baptist as a prophet. (Mat. xiv. 5, 6.) One day, however, while the king was celebrating the festival of his birth, with the principal persons of his court, the daughter of Herodias danced before him; and pleased him so well, that he promised with an oath to give her whatever she should ask of him. By her mother's advice she asked the head of John the Baptist; upon which the king commanded John to be beheaded in prison, and the head to be given her.—Aretas, king of Arabia, to revenge the affront which Herod had offered to his daughter, declared war against him, and overcame him in a very obstinate engagement. Herod being afterwards detected as a party in Sejanus's conspiracy, was banished by the emperor Caius into Lyons in Gaul; whither Herodias accompanied him.

This Antipas is the Herod who, being at Jerusalem at the time of our Saviour's passion (Luke xxiii. 11.), ridiculed him, by dressing him in a white robe, and directing him to be conducted back to Pilate, as a mock king, whose ambition gave him no umbrage. The time which Antipas died is not known: however, it is certain he died in exile, as well as Herodias. Josephus says, that he died in Spain, whither Caius upon his coming to Gaul, the first year of his banishment, might order him to be sent.

ANTIPATER, the disciple of Aristotle, and one of Alexander the Great's generals, was a man of great abilities, and a lover of the Sciences; but was accused of poisoning Alexander. He subdued the revolted Thracians, relieved Megalopolis, and overthrew the Spartans there. He died 321 years before the Christian æra.

ANTIPATER, an Idumean of illustrious birth, and possessed of great riches and abilities, taking advantage of the confusion into which the two brothers Hyrcanus and Aristobulus plunged Judea by their contest for the office of high-priest, took such measures as to gain Hyrcanus that office, and under his government to obtain the absolute direction of all affairs; while his great abilities and application to business made him so considerable, that he was honoured as much as if he had been invested with the royal authority in form:

but he was at last poisoned by a Jew, named Malachus, Antipater, 43 years before the Christian æra. He left among his Antipathy. other children, the famous Herod king of the Jews.

ANTIPATER (Cælius), a Roman historian, who wrote a history of the Punic war, much valued by Cicero. The emperor Adrian preferred him to Salust.

ANTIPATER of Sydon, a stoic philosopher, and likewise a poet, commended by Cicero and Seneca: he flourished about the 171st Olympiad. We have several of his epigrams in the *Anthologia*.

ANTIPATHY, in physiology, is formed from the two Greek words *anti* contrary, and *πάθος* passion. Literally taken, the word signifies *incompatibility*: but for the most part the term *antipathy* is not used to signify such incompatibilities as are merely physical; it is reserved to express the aversion which an animated or sensitive being feels at the real or ideal presence of particular objects. In this point of view, which is the light in which we at present consider the term, *antipathy*, in common language, signifies “a natural horror and detestation, an insuperable hatred, an involuntary aversion, which a sensitive being feels for some other object, whatever it is, though the person who feels this abhorrence is entirely ignorant of its cause, and can by no means account for it.” Such is, they say, the natural and reciprocal hostility between the salamander and the tortoise; between the toad and the weasel; or between sheep and wolves. Such is the invincible aversion of particular persons against cats, mice, spiders, &c.; a prepossession which is sometimes so violent, as to make them faint at the sight of these animals. Of these and a thousand other antipathies the ancient naturalists, the schoolmen, and the vulgar, form so many legends; and relate them as certain facts, that they may demand an explication of them from the philosophers. But these sages begin with investigating whether such antipathies actually exist or not.

To explore the matter without prejudice, we shall find it necessary to abstract from the subjects of this disquisition, 1. All such antipathies as are not ascertained; as that which is supposed to be felt by hens at the sound of an harp whose strings are made of a fox's bowels, between the salamander and tortoise, and between the weasel and the toad. Nothing is less confirmed, or rather nothing is more false, than these facts, with which vulgar credulity and astonishment are amused and actuated: and though some of these antipathies should be ascertained, this would be no proof that the animals which feel them are not acquainted with their causes, according to their mode and proportion of knowledge; in which case it will be no longer the antipathy which we have defined.

2. We must abstract those antipathies which can be extinguished or resumed at pleasure; those fictitious aversions, which certain persons feel, or pretend to feel, with affected airs, that they may appear more precise and finical, or singularly and prodigiously elegant; that they may seem to have qualities so exquisitely fine, as require to be treated with peculiar delicacy. One who bestows any attention on the subject, would be astonished to find how many of these chimerical aversions there are, which are pretended, and passed upon the world by those who affect them as natural and unconquerable.

3. When we abstract those aversions the causes of which

Antipathy, which are known and evident; we shall be surpris'd, after our deduction of these pretended antipathies from the general sum, how small, how inconsiderable, is the quantity of those which are conformable to our definition. Will any one pretend to call by the name of *antipathy*, those real, innate, and incontestable aversions which prevail between sheep and wolves? Their cause is obvious; the wolf devours the sheep, and subsists upon his victims; and every animal naturally flies with terror from pain or destruction: sheep ought therefore to regard wolves with horror, which for their nutrition tear and mangle the unresisting prey. From principles similar to this, arises that aversion which numbers of people feel against serpents; against small animals, such as reptiles in general, and the greatest number of insects. During the credulous and susceptible period of infancy, pains have been taken to impress on our minds the frightful idea that they are venomous; that their bite is mortal; that their sting is dangerous, productive of tormenting inflammations or tumours, and sometimes fatal: they have been represented to us as ugly and fœtid; as being, for that reason, pernicious to those who touch them; as poisoning those who have the misfortune to swallow them. These horrible prepossessions are industriously inculcated from our infancy; they are sometimes attended and supported by dismal tales, which are greedily imbibed, and indelibly engraven on our memories. It has been taught us both by precept and example, when others at their approach have assumed in our view the appearance of detestation and even of terror, that we should fly from them, that we should not touch them. Is it then wonderful (if our false impressions as to this subject have been corrected neither by future reflections nor experiments), that we should entertain, during our whole lives, an aversion for these objects, even when we have forgot the admonitions, the conversations, and examples, which have taught us to believe and apprehend them as noxious beings? and in proportion to the sensibility of our frame, in proportion as our nerves are irritable, our emotions at the sight of what we fear will be more valiant, especially if they anticipate our expectation, and seize us unprepared, though our ideas of what we have to fear from them are the most confused and indistinct imaginable. To explain these facts, is it necessary to fly to the exploded subterfuge of occult qualities inherent in bodies, to latent relations productive of antipathies, of which no person could ever form an idea?

It is often sufficient to influence a person who had formerly no aversion for an object, if he lives with some other associate who gives himself up to such capricious panics; the habit is insensibly contracted to be agitated with disagreeable emotions at the presence of an object which had been formerly beheld with indifference and cold blood. I was acquainted (says the author of the article *Antipathy* in the French Encyclopédie) with a person of a very sound understanding, whom thunder and lightning by no means terrified; nay, to whom the spectacle appeared magnificent and the sound majestic: yet to a mind thus seemingly fortified against the infectious terror, no more was necessary than spending the summer with a friend in whom the appearance of lightning excited the strongest emotions, and whom the remotest clap of thunder affected with

extravagant paroxysms, to become timid in excess at the approach of thunder; nor could he ever afterwards surmount the fear which it inspired.—The frightful stories of dogs and cats, which have killed their masters, or which have given them mortal wounds, are more than sufficient to inspire a timorous person with aversion against these animals; and if the olfactory nerves of such a person be delicate, he will immediately discover the smell of them in a chamber: disturbed by the apprehension which these effluvia excite in his mind, he gives himself up to the most violent uneasiness, which is tranquillized when he is assured that the animal is no longer in the room. If by chance, in the search which is made to calm the uneasiness of this timorous person, one of these creatures should at last be discovered, every one presently exclaims, *A miracle*: and admits the reality of *antipathies* into his creed; whilst all this is nothing but the effect of a childish fear, founded on certain confused and exaggerated ideas of the hazard which one may run with these animals. The *antipathy* which some people entertain against eels, though they are eaten by others with pleasure, arises from nothing but the fear of serpents, to which these fishes are in some degree similar. There are likewise other *antipathies* which do not originate in the imagination, but arise from some natural incongruity; such as we often remark in children, for particular kinds of victuals, with which their taste is not offended, but which their stomachs cannot digest, and which are therefore disgorged as soon as swallowed.

To what then are those *antipathies*, of which we have heard so much, reducible? Either to legendary tales; or to aversions against objects which we believe dangerous; or to a childish terror of imaginary perils; or to a disrelish, of which the cause is disguised; or to a ridiculous affectation of delicacy; or to an infirmity of the stomach; in a word, to a real or pretended reluctance for things which are either invested, or supposed to be invested, with qualities hurtful to us. Too much care cannot be taken in preventing, or regulating, the *antipathies* of children; in familiarising them with objects of every kind; in discovering to them, without emotion, such as are dangerous; in teaching them the means of defence and security, or the methods of escaping their noxious influence: and, when the rational powers are matured by age, in reflecting on the nature of those objects which we fear, in ascertaining what has been told concerning their qualities, or in vigorously operating upon our own dispositions to overcome those vain repugnancies which we may feel. See SYMPATHY, which is the opposite of *Antipathy*.

ANTIPATHY, in ethics, hatred, aversion, repugnancy. *Hatred* is entertained against persons; *aversion*, and *antipathy*, indiscriminately against persons or things; and *repugnancy*, against actions alone.

Hatred is more voluntary than *aversion*, *antipathy*, or *repugnancy*. These last have greater affinity with the animal constitution. The causes of ANTIPATHY are less known than those of *aversion*. *Repugnancy* is less permanent than either the one or the other—We hate a vicious character, we feel *aversion* to its exertions: we are affected with ANTIPATHY for certain persons at first sight; there are some affairs which we transact with *repugnancy*—*Hatred* calumniates; *aversion* keeps us at a distance from certain persons: ANTIPATHY makes

Antipatris us detest them; *repugnancy* hinders us from imitating them.

Antipodes.

ANTIPATRIS (Acts xxiii. 31.), a town of Palestine, anciently called *Capbar-Saba*, according to Josephus, but named *Antipatris* by Herod the Great, in honour of his father Antipater. It was situated in a pleasant valley near the mountains, in the way from Jerusalem to Cæsarea. Josephus places it at about the distance of seventeen miles from Joppa.

ANTIPELARGIA, among the ancients, a law, whereby children are obliged to furnish necessaries to their aged parents. The ciconia, or stork, is a bird famous for the care it takes of its parents when grown old. Hence, in some Latin writers, this is rendered *lex ciconiaria*, or the stork's law.

ANTIPHONARY, **ANTIPHONARIUM**, a service-book, which contained all the invitatories, responsories, collects, and whatever else was sung or said in the choir, except the lessons. This is otherwise called *responsarium*, from the responses therein contained. The author of the Roman *antiphonary* was pope Gregory the Great. We also find mention of nocturnal and diurnal *antiphonaries*, for the use of the daily and nightly offices; summer and winter *antiphonaries*; also *antiphonaries* for country churches, &c. By the provincial constitutions of Archbishop Winchelsey, made at Merton, A. D. 1305, it is required that one of these should be found in every church within the province of Canterbury. The use of these, and many other popish books, were forbid by the 3d and 4th of Edward VI. c. 10.

ANTIPHONY, the answer made by one choir to another, when the psalm or anthem is sung between two.

ANTIPHONY, sometimes denotes a species of psalmody, wherein the congregation, being divided into two parts, repeat the psalms, verse for verse, alternately. In this sense, antiphony stands contradistinguished from symphony, where the whole congregation sings together.

Antiphony differs from responsorium, because in this latter the verse is only spoken by one person, whereas in the former, the verses are sung by the two choirs alternately. The original of Antiphonal singing in the western churches is referred to the time of St Ambrose, about the year 374. That father is said to have first introduced it into the church of Milan, in imitation of the custom of the eastern church, where it appears to be of greater antiquity, though as to the time of its institution, authors are not agreed; it was most probably introduced at Antioch, between the year of Christ 347 and 356.

ANTIPHONY is also used to denote the words given out at the beginning of the psalm, to which both the choirs are to accommodate their singing.

ANTIPHONY, in a more modern sense, denotes a kind of composition made of several verses extracted out of different psalms, adapted to express the mystery solemnized on the occasion.

ANTIPODES, in geography, a name given to those inhabitants of the globe that live diametrically opposite to each other. The word is Greek, and compounded of *anti*, opposite, and *pus*, a foot; because their feet are opposite to each other.

The antipodes lie under opposite meridians and op-

posite parallels; in the same degree of latitude, but of opposite denominations, one being north and the other south. They have nearly the same degree of heat and cold, days and nights of equal length, but in opposite seasons. It is noon to one, when midnight to the other; and the longest day with the one, is the shortest with the other.

Plato is esteemed the first who thought it possible that the antipodes subsisted, and is looked upon as the inventor of the word. As this philosopher apprehended the earth to be spherical, he had only one step to make to conclude the existence of the antipodes.

The ancients, in general, treated this opinion with the highest contempt; never being able to conceive how men and trees could subsist suspended in the air with their feet upwards, for so they apprehended they must be in the other hemisphere.

They never reflected that these terms *upwards* and *downwards* are merely relative; and signify only nearer to, or farther from, the centre of the earth, the common centre to which all heavy bodies gravitate; and that, therefore, our antipodes have not their feet upwards and head downwards any more than ourselves; because they, like us, have their feet nearer the centre of the earth, and their heads farther from it. To have the head downwards and feet upwards, is to place the body in a direction of gravity tending from the feet to the head: but this cannot be supposed with regard to the antipodes; for they, like us, tend toward the centre of the earth, in a direction from head to foot.

ANTIPOLIS (anc. geog.), now **ANTIBES**, on the coast of Provence, a colony of the Massilians, near the river Verus, in Gallia Narbonensis (Livy), three leagues to the west of Nice. E. Long. 7° Lat. 43° 40'.

ANTIQUARE, among Roman lawyers, properly denotes the rejecting of a new law, or refusing to pass it. In which sense, *antiquating* differs from *abrogating*; as the latter imports the annulling an old law, the former the rejecting a new one.

ANTIQUARE is also used for a law's growing obsolete, or into disuse, either by age or non-observance.

ANTIQUARI, a name given to copiers of old books. After the decline of learning amongst the Romans, and when many religious houses were erected, learning was chiefly in the hands of the clergy; the greatest number of whom were regulars, and lived in monasteries. In these houses were many industrious men who were continually employed in making new copies of old books, either for the use of the monastery or for their own emolument. These writing monks were distinguished by the name of *Antiquarii*. They deprived the poor librarii, or common scribes, of great part of their business, so that these found it difficult to gain a subsistence for themselves and families. This put them upon finding out more expeditious methods of transcribing books. They formed the letters smaller, and made use of more jugations and abbreviations than had been usual. They proceeded in this manner till the letters became exceedingly small; the abbreviations were very numerous, and extremely difficult to be read. This in some measure accounts for the great variety of hands in the species of writing called *Modern Gothic*. When a number of copies were to be made of the same work, it was usual to employ several persons at the same time in writing it; each person, except

Antipolis
Antiquarii.

Antiquary except him who wrote the first skin, began where his fellow was to leave off.

Antiquities

ANTIQUARY, a person who studies and searches after monuments and remains of antiquity; as old medals, books, statues, sculptures, and inscriptions; and, in general, all curious pieces that may afford any light into antiquity.

In the chief cities of Greece and Italy, there were persons of distinction called *antiquaries*, whose business it was to show strangers the antiquities of the place, to explain the ancient inscriptions, and to give them all the assistance they could in this way of learning.—Pausanias calls these antiquaries *ἐξηγηταί*. The Sicilians call them *mythologi*.

There was an ancient college of antiquaries erected in Ireland by Ollamh Fodhla, 700 years before Christ, for composing a history of that country: And to this, say the Irish historians, it is owing that the history and antiquities of that kingdom may be traced back beyond those of most other nations.

There is a society of antiquaries in London, and another in Edinburgh, incorporated by the king's charter. See SOCIETY.

ANTIQUARY is also used by ancient writers for the keeper of the antiquarium or cabinet of antiquities. This officer is otherwise called *archæota*, or antiquary of a king, a prince, a state, or the like.

Henry VIII. gave John Leland the title of his *antiquary*; a title which, says the author of his life, no body ever enjoyed besides himself. But the restriction, we suppose, was only intended to be understood in respect of the kings of England. M. Schott, we find, had the title of *antiquary* to the king of Prussia; P. Pedruzzi, that of *antiquary* of the duke of Parma; M. Galland resided some time in Turkey under the title of *antiquary* of the king of France.—The university of Oxford have still their antiquary under the denomination of *custos archivorum*.—The kings of Sweden have been at great expences in order to illustrate the antiquity of their country, having established an academy of antiquaries with this single view.—The office of the ancient Irish antiquaries was to preserve the genealogies of the kings of Ireland, to correct the regal tables of succession, and deliver down the pedigree of every collateral branch of the royal family.

ANTIQUATED, something obsolete, out of date, or out of use.

ANTIQUE, in a general sense, something that is ancient: but the term is chiefly used by sculptors, painters, and architects, to denote such pieces of their different arts as were made by the ancient Greeks and Romans. Thus we say, an antique bust, an antique statue, &c.

ANTIQUE is sometimes contradistinguished from *ancient*, which signifies a less degree of antiquity. Thus, antique architecture is frequently distinguished from ancient architecture.

ANTIQUITIES, a term implying all testimonies, or authentic accounts, that have come down to us of ancient nations. Bacon calls antiquities *the wrecks of history*, or such particulars as industrious and learned persons have collected from genealogies, inscriptions, monuments, coins, names, etymologies, archives, instruments, fragments of history, &c.

Antiquities form a very extensive science, including

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“an historical knowledge of the edifices, magistrates, offices, habiliments, manners, customs, ceremonies, worship, and other objects worthy of curiosity, of all the principal ancient nations of the earth.”

This science is not a matter of mere curiosity, but is indispensable to the theologian; who ought to be thoroughly acquainted with the antiquities of the Jews, to enable him properly to explain numberless passages in the Old and New Testaments: to the lawyer; who, without the knowledge of the antiquities of Greece and Rome, can never well understand and properly apply the greatest part of the Roman laws: to the physician and the philosopher, that they may have a complete knowledge of the history and principles of the physic and philosophy of the ancients: to the critic, that he may be able to understand and interpret ancient authors: to the orator and poet; who will be thereby enabled to ornament their writings with numberless images, allusions, comparisons, &c.

Antiquities are divided into sacred and profane, into public and private, universal and particular, &c. It is true, that the antiquaries (especially such as are infected with a spirit of pedantry, and the number of these is great) frequently carry their inquiries too far, and employ themselves in laborious researches after learned trifles; but the abuse of a science ought never to make us neglect the applying it to rational and useful purposes.

Many antiquaries also restrain their learned labours to the eclairsissement of the antiquities of Greece and Rome: but this field is far too confined, and by no means contains the whole of this science, seeing it properly includes the antiquities of the Jews, Egyptians, Persians, Phœnicians, Carthaginians, Hetruscans, Germans, and, in general, all those principal nations mentioned in ancient history: so far as any accounts of them are come down to us.

If to the general subjects above mentioned we add the particular study of antiques, of the statues, bass-reliefs, and the precious relics of architecture, painting, cameius, medals, &c. it is easy to conceive that antiquities form a science very extensive and very complicated, and with which only a very small acquaintance could have been attainable by any one man, if our predecessors had not prepared the way for us; if they had not left us such inestimable works as those of Gronovius, Grævius, Montfaucon, Count Caylus, Winckelman, the Hebraic antiquities of D. Iken of Bremen, the Grecian antiquities of Brunings, the Roman antiquities of Nieupoort, and especially that work which is intitled *Bibliographia Antiquaria Joh. Alberti Fabricii*, professor at Hamburgh; &c. &c. Nor must we here forget that very valuable work, with which our countryman Mr Robert Wood has lately enriched this science, and which is so well known, and so justly esteemed by all true connoisseurs, under the title of the *Ruins of Palmyra*, and those of *Balbec*. It is by this work that we are fully convinced of the grandeur and magnificence, the taste and elegance, of the buildings of the ancients. We here see that the invention of these matters is not all owing to the Greeks, but that there were other nations who served them as models. For tho' many of the edifices of Palmyra are to be attributed to the emperor Aurelian, and to Odenatus and his wife Zenobia, who reigned there about the year

Antiquities 264, yet there are found at the same place ruins of buildings that appear to be of far greater antiquity, and that are not less beautiful. The ancient Persepolis is sufficient to prove this assertion. When we duly reflect on all these matters, and especially if we attempt to acquire any knowledge of this science, we shall soon be convinced that it but ill becomes a *petit-maitre* to laugh at a learned antiquary.

The knowledge of those monuments of the ancients, the works of sculpture, statuary, graving, painting, &c. which they call *antiques*, requires a strict attention with regard to the matter itself on which the art has been exercised; as the wax, clay, wood, ivory, stones of every kind, marble, flint, bronze, and every sort of metal. We should begin by learning on what matter each ancient nation principally worked, and in which of the fine arts they excelled. For the matter itself, as the different sorts of marble, compositions of metals, and the species of precious stones, serve frequently to characterize the true antique, and to discover the counterfeit. The connoisseurs pretend also to know, by certain distinct characters in the design and execution of a work of art, the age and nation where it was made. They find, moreover, in the invention and execution, a degree of excellence which modern artists are not able to imitate. Now, though we ought to allow, in general, the great merit of the ancients in the polite arts, we should not, however, suffer our admiration to lead us into a blind superstition. There are pieces of antiquity of every sort, which have come down to us; some that are perfectly excellent; and others so wretched, that the meanest among modern artists would not acknowledge them. The mixture of the good and bad has taken place in all subjects, at all times, and in all nations. The misfortune is, that most of our great antiquaries have been so little skilled in designing as scarcely to know how to draw a circle with a pair of compasses. It is prejudice, therefore, which frequently directs them to give the palm to the ancients, rather than a judgment directed by a knowledge of the art. That character of expression which they find so marvellous in the works of antiquity, is often nothing more than a mere chimera. They pretend that the artists of our days constantly exaggerate their expressions; that a modern Bacchus has the appearance of a man distracted with intoxication; that a Mercury seems to be animated with the spirit of a fury; and so of the rest. But let them not decide too hastily. Almost all the antique figures are totally void of all spirit of expression; we are forced to guess at their characters. Every artificial expression requires, moreover, to be somewhat exaggerated. A statue or portrait is an inanimate figure; and must therefore have a very different effect from one which, being endowed with life, has the muscles constantly in play, and where the continual change of the features, the motion of the eyes, and the looks, more or less lively, easily and clearly express the passions and sentiments. Whereas, in a figure that is the produce of art, the delicate touches, that should express the passions, are lost to the eyes of the spectators: they must therefore be struck by strong, bold characters, which can affect them at the first glance of the eye. A very moderate artist is sensible, at the

same time, that he is not to give his figures extravagant expressions, nor to place them in distorted attitudes.

ANTIQUITY signifies times or ages past long ago. Thus, we say, the heroes of antiquity, &c.

ANTIQUITY is also used to denote the works or monuments of antiquity. See ANTIQUITIES.

ANTIQUITY likewise expresses the great age of a thing; and in this sense we say, the antiquity of a family, the antiquity of a kingdom.

ANTIRRHINUM, SNAP-DRAGON, OR CALVES-SNOUT: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personate*. The essential characters are these: The calyx consists of five leaves; the basis of the corolla is bent backwards, and furnished with nectaria; the capsule is bilocular. There are 14 species of the antirrhinum, 10 of which are natives of Britain; viz. the cymbalaria, or ivy-leaved toad-grass; the elatine, or sharp-pointed fluellin; the spurium, or round-leaved fluellin; the arvense, or corn-blue toad-flax; the repens, or creeping toad-flax; the monospermum, or sweet-smelling toad-flax; the linaria, or common yellow toad-flax; the minus, or least toad-flax; the majus, or greater snap-dragon; and the orontium, or least snap-dragon. The linaria is said to be cathartic and diuretic; but it is not used in the shops.

ANTIRRHIUM (anc. geog.), a promontory at the mouth of the Corinthian bay, where it is scarce a mile broad, and where it separates the Ætolians from the Peloponnesus; so called from its opposite situation to Rhium in Peloponnesus (Pliny): both are now called the *Dardanelles of Lepanto*.

ANTISABBATARIANS, a modern religious sect, who oppose the observance of the Christian sabbath. The great principle of the Antisabbatarians is, that the Jewish sabbath was only of ceremonial, not moral obligation; and consequently is abolished by the coming of Christ.

ANTISAGOGÉ, in rhetoric, a figure differing little from that called *concession*. The following passage from Cicero is an instance of it: *Difficilis ratio belli gerendi; at plena fidei, plena pietatis: et si dicas, magnus labor, multa pericula proponuntur; at gloria ex his immortalis est consecutura*. See CONCESSION.

ANTISCII, in geography, people who live on different sides of the equator, whose shadows at noon are projected opposite ways. Thus the people of the north are Antiscii to those of the south; the one projecting their shadows at noon toward the north pole, and the other toward the south pole.

ANTISCORBUTICS, medicines good in scorbutic cases.

ANTISEPTICS (from *anti* and *σηπτος* *putrid*, of *σηπω* to putrify), an appellation given to such substances as resist putrefaction.

We have some curious experiments in relation to antiseptic substances by Dr Pringle, who has ascertained their several virtues. Thus, in order to settle the antiseptic virtue of salts, he compared it with that of common sea-salt; which being one of the weakest, he supposes equal to unity, and expresses the proportional strength of the rest by higher numbers, as in the following table.

Salts,

Antiseptics,
Antispas-
modics.

Salts, their antiseptic virtue.

Sea-salt	-	1	Saline mixture	-	3
Sal gemma	-	1 +	Nitre	-	4 +
Tartar vitriolated	-	2	Salt of hartshorn	-	4 +
Spiritus Mindereri	-	2	Salt of wormwood	-	4 +
Tartaris solubilis	-	2	Borax	-	12 +
Sal diureticus	-	2 +	Salt of amber	-	20 +
Crude sal ammoniac	-	3	Alum	-	30 +

In this table the proportions are marked in integral numbers : only to some there is added the sign +, to show, that those salts are possessed of a stronger antiseptic virtue than the number in the table expresses, by some fractions ; unless in the three last, where the same sign imports, that the salt may be stronger by some units.

Some resinous and other substances even exceed the antiseptic virtues of the neutral salts ; thus myrrh, asfætida, terra japonica, and aloes, are at least 12 times more antiseptic than sea-salt. Two grains of camphor is equivalent to 60 grains of that salt. An infusion of a few grains of Virginian snake-root, in powder, exceeds 12 times its weight of sea-salt. Camomile flowers have nearly the same extraordinary quality. The Jesuits bark has it also. Besides these, pepper, ginger, saffron, contrayerva-root, are 12 times more antiseptic than sea-salt. Dried sage, rhubarb, the root of the wild valerian, mint, angelica, ground ivy, fenna, green-tea, red roses, wormwood, mustard, and horse-radish, were likewise found more antiseptic than the standard.

To the class of antiseptic medicines may likewise be added fermented liquors, acids, spirits, and even those plants called *anti-acids*, and erroneously supposed hasteners of putrefaction, particularly horse-radish. Now vegetables, possessing this virtue, are the more valuable, in that being usually free of acrimony, they may be taken in much greater quantities than either spirits, acids, resins, or even the neutral salts.

Antiseptics are prescribed in all putrid, malignant, and pestilential cases. It is to be remarked, however, that different kinds of them are to be given in different diseases, and even in different stages of the same disease. Thus, the bark is a specific in a gangrene, when the vessels are relaxed, and the blood resolved or disposed to putrefaction ; but will fail, if the vessels are too full, or the blood be too thick. With the same caution is the bark to be used in wounds, viz. chiefly in cases of absorbed matter, when it infects the humours, and brings on a hectic fever.

By the great antiseptic virtue of alum, the bark, and other astringents, it should seem, that a striction had no small share in the cure of putrid disorders ; and, indeed, the very nature of putrefaction consists in a separation or disunion of the parts. But as astringents are improper to be administered in many cases, contrayerva-root, snake-root, camphor, &c. may supply their place ; which, though highly antiseptic, have very little, or any, of an astringent quality.

ANTISPASMODICS, are medicines proper for the cure of spasms and convulsions. Opium, balsam of Peru, and the essential oils of many vegetables, are the principal in this class of medicines. Opium excels, for its immediate effects. Peruvian balsam, in many instances, produces more lasting benefit than opi-

um, and sometimes succeeds where opium fails. As antispasmodics, the essential oils differ in this from opium, that they act more on a particular part than on the system in general, and have no soporific effect. Some medicines remove spasms by immediate contact, as asses milk, cream, oil of almonds ; others by repelling heat, as gas, sulphur, nitre, sal ammoniac, &c. And where the strictures are produced by inanition and a defect of vital heat, spasms are removed by those medicines that restore the *vis vite*, such as valerian, castor, musk, &c.

ANTISTASIS, in oratory, a defence of an action from the consideration that had it been omitted worse would have ensued. This is called by Latin writers *comparativum argumentum* ; such, *e. gr.* would be the general's defence who had made an inglorious capitulation, That, without it, the whole army must have perished.

ANTISTHENES, a Greek philosopher, and founder of the Cynics. He was born at Athens, and passed the former part of his life as a soldier. Having afterwards been an attendant at the lectures of Socrates, he was principally charmed with those exhortations of that great philosopher, which persuaded to frugality, to temperance, and to moderation : these Antisthenes was resolved to practise by carrying every precept to its utmost extent. Permitting therefore his beard to grow, he went about the streets in a thread-bare coat, scarcely to be distinguished from a common beggar. He prided himself upon the most rigid virtue, and thought himself obliged to attack the vicious wherever he found them. This gave him some reputation in the city ; but it may be supposed, that, in a place so very luxurious as Athens, he had more enemies than disciples. His philosophy consisted rather in action than speculation : it was therefore his constant maxim, That to be virtuous was to be happy, and that all virtue consisted in action ; that the wise man should live for himself, contented in all situations, and happy alone in the consciousness of his own virtue. He acknowledged nothing to be good but what was honourable ; and asserted, that virtue might be acquired by practice. Laertius tells us there were 10 tomes of his works ; and he has given us many of his apophthegms.

ANTISTOECHON, in grammar, the using one letter instead of another ; as *olli* for *illi*.

ANTISTROPHE, in grammar, a figure by which two things mutually depending on one another, are reciprocally converted ; as, *the servant of the master, the master of the servant*.

ANTISTROPHE, among lyric poets, that part of a song and dance in use among the ancients, which was performed before the altar, in returning from west to east ; in opposition to strophe. See STROPHE and ODE.

ANTI-TRACTÆ, in church history, a branch of Gnostics, who held, that God was good and just, but that a creature had created evil ; and consequently that it is our duty to oppose this author of evil, in order to avenge God of his adversary.

ANTITHENAR, in anatomy, a name given to the adductor incisis. See ANATOMY, *Table of the Muscles*.

ANTITHESIS, in rhetoric, a contrast or opposition of words or sentiments. Such is that of Cicero, in the second Catilinarian : " On one side stands mo-

Antistasis
||
Antithesis.

Antithesis deſty, on the other impudence; on one fidelity, on the other deceit; here piety, there ſacrilege; here continency, there luſt, &c.” Such alſo is that of Auguſtus to ſome ſeditious young men: *Audite, juvenes, ſenem, quem juvenem ſenes audivere.* Such again is that of Seneca: *Cura læves loquuntur, ingentes ſtupent.* And that of Virgil:

Fleſcere ſi nequeo ſuperos, Acheronta movebo.

St Auguſtine, Seneca, Salvian, and many other ancient writers, ſeem greatly to effect antithetiſis; but among the moderns they are generally decried. Deſmaretz repreſents them as the favourites of young writers. The following is an example of modern antithetiſis:

——— *Though gentle, yet not dull;
Strong, without rage; without o'erflowing, full.*

ANTITHESIS is ſometimes uſed for controverſy. In this ſenſe, we meet with *antithetic method*, *antithetic diſcourſes*, &c. Marcion compoſed a volume of Antithetiſes, or contrarieties and oppoſitions between the law and the goſpel.

ANTITRAGUS MUSCULUS, in anatomy, a muſcle of the ear. See ANATOMY, *Table of the Muſcles.*

ANTITRINITARIANS, thoſe who deny the Trinity, and teach that there are not three perſons in the Godhead. Thus the Samofatenians, who do not believe the diſtinction of perſons in God; the Arians, who deny the divinity of the Word; and the Macedonians, who deny that of the Holy Spirit, are all properly Antitrinitarians. Among the moderns, Antitrinitarians are particularly underſtood of Socinians, called alſo Unitarians.

The *Bibliotheca Antitrinitariorum*, or *Antitrinitarian Library*, is a poſthumous work of Chriſtopher Sandius, an eminent Antitrinitarian; wherein he gives a liſt, digeſted in order of time, of all the Socinian or modern Antitrinitarian authors, with a brief account of their lives, and a catalogue of their works. See UNITARIAN.

ANTITYPE, a Greek word, properly ſignifying a type or figure correſponding to ſome other type.

The word antitype occurs twice in the New Teſtament; viz. in the epiſtle to the Hebrews, ix. 24. and in St Peter, i Eph. iii. 21. where its genuine import has been much controverted. The former ſays, that “Chriſt is not entered into the holy places made with hands, which are *αντιτυπα*, the figures or antitypes of the true—now to appear in the preſence of God for us.” Now *τυπος*, ſignifies the pattern by which another thing is made; and as Moſes was obliged to make the tabernacle, and all things in it, according to the pattern ſhewed him in the mount; the tabernacle ſo formed was the antitype of what was ſhown to Moſes: any thing, therefore, formed according to a model or pattern, is an antitype. In the latter paſſage, the apoſtle, ſpeaking of Noah’s flood, and the deliverance only of eight perſons in the ark from it, ſays, *Ως ημες ημας αντιτυπον του σωτηριου βαπτισμα, Baptiſm, being an antitype to that, now ſaves us; not putting away the filth of the fleſh, but the answer of a good conſcience towards God, &c.* The meaning is, that righteouſneſs, or the answer of a good conſcience towards God, now ſaves us by means of the reſurrection of

Chriſt, as formerly righteouſneſs ſaved thoſe eight perſons by means of the ark, during the flood. The word antitype, therefore, here ſignifies a general ſimilitude of circumſtances; and the particle *α*, *whereunto*, refers, not to the immediate antecedent, *υδατος*, *water*, but to all that precedes.

ANTITYPE, among the ancient Greek fathers, and in the Greek liturgy, is alſo applied to the ſymbols of bread and wine in the ſacrament. Hence it hath been argued, by many Proteſtants, that the Greeks do not really believe the doctrine of tranſubſtantiation; becauſe they call the bread and wine *antitypes*, *αντιτυπα*, q. d. figures, ſimilitudes; and this even after the conſecration.

ANTIUM, (anc. geog.) a city of the Volſci, (Livy); ſituated on the Tuſcan ſea, yet without a harbour, becauſe they had a neighbouring hamlet, called *Ceno*, with a harbour, (Strabo). The Romans gained their firſt reputation in naval affairs againſt the Antiates; part of whoſe ſhips they conveyed into the arſenal of Rome, and part they burnt; and with their beaks or roſtra adorned the pulpit erected in the Forum, thence called *Roſtra*, (Livy, Florus). Here ſtood a famous temple of Fortune, (Horace). Addiſon ſays, there were two Fortunæ worſhipped at Antium.—It is now extinct, but the name ſtill remains in the *Capo d’Anzo*.

ANTIVARI, a ſtrong town of Turkey, in Europe, in Dalmatia, a Greek archbiſhop’s ſee, and ſubject to the Turks. E. Lon. 29. 15. N. Lat. 43. 0.

ANTLER, among ſportsmen, a ſtart or branch of a deer’s attire.

Brow-ANTLER, denotes the branch next the head; and,

Bes-ANTLER, the branch next above the brow-antler.

ANTLIA, an ancient machine, ſuppoſed to be the ſame with our pump. Hence the phraſe *in antliam condemnari*, according to the critics, denotes a kind of puniſhment, whereby criminals were condemned to drain ponds, ditches, or the like.

ANTOEICI, in geography, thoſe inhabitants of the earth who live under the ſame meridian, and at the ſame diſtance from the equator; the one toward the north, and the other toward the ſouth. Hence they have the ſame longitude; and their latitude is alſo the ſame, but of a different denomination. They are in the ſame ſemicircle of the meridian, but oppoſite in parallels. They have precisely the ſame hours of the day and night, but oppoſite ſeaſons; and the night of the one is always equal to the day of the other.

ANTOINE, a town of France, in Dauphiny, in the dioceſe of Vienne, with a celebrated abbey. It is ſeated among the mountains 13 miles eaſt of Lyons. E. Lon. 5. 20. N. Lat. 45. 43.

ANTONA, (Tacitus); a river of Britain, which Camden ſuppoſes to be a faulty reading for *Avuona* or *Aufona*, (the Avon).

ANTONACUM, ANTONNACUM, or ANTUNNACUM, a town of the Treveri; now *Andernach*, below Coblenz. E. Lon. 7. 5. Lat. 50. 25.

ANTONIA, a citadel of Jeruſalem, the origin of which we have in Joſephus; who ſays, that Hyrcanus, the firſt high-prieſt of that name, built Baris near the temple, a houſe with turrets, where he generally reſided,

Antitype
||
Antonia.

Antonia sided. Herod afterwards made it stronger, for the security and defence of the temple; and in honour of Marc Antony, who then commanded in the east, called it *Antonia*. It was very extensive, and could accommodate a Roman legion: from it there was a full view of the temple.

ANTONIA (St), a town of France, in Rouergue, in the diocese of Rhodéz, whose fortifications are demolished. It is seated on the river Aveiron. E. Long. 55. N. Lat. 44. 10.

ANTONIAN WATERS, medicinal waters of Germany, very pleasant to the taste, and esteemed good in many chronic and hypochondriac cases. See TONSTEIN.

ANTONIANO (Silvio), a man of great learning, who raised himself from a low condition by his merit, was born at Rome in the year 1540. When he was but ten years old, he could make verses upon any subject proposed to him; and these so excellent, though pronounced extempore, that even a man of genius could not compose the like without a good deal of time and pains. The Duke de Ferrara coming to Rome, to congratulate Marcellus II. upon his being raised to the pontificate, was so charmed with the genius of Antoniano, that he carried him to Ferrara, where he provided able masters to instruct him in all the sciences. From thence he was sent for by Pius IV. who made him professor of the belles lettres in the college at Rome. Antoniano filled this place with so much reputation, that, on the day when he began to explain the oration *pro Marco Marcello*, he had a vast crowd of auditors, and among these no less than 25 cardinals. He was afterwards chosen rector of the college; and after the death of Pius IV. being seized with a spirit of devotion, he joined himself to Philip Neri, and accepted the office of secretary to the sacred college, offered him by Pius V. which he executed for 25 years with the reputation of an honest and able man. He refused a bishopric which Gregory XIV. would have given him; but he accepted the office of secretary to the briefs, offered him by Clement VIII. who made him his chamberlain, and afterwards a cardinal. Antoniano killed himself by too great fatigue: for he spent whole nights in writing letters; which brought on a sickness, whereof he died, in the 63d year of his age. He wrote with such ease and fluency, that he never almost made any blot or rasure; and it is said of him, that he preserved the flower of his virginity during his whole life.

ANTONIDES VANDER GOES (John), an eminent Dutch poet, born at Goes in Zealand, the 3d of April 1647. His parents were Anabaptists, people of good character, but of low circumstances. They went to live at Amsterdam when Antonides was about four years old; and, in the ninth year of his age, he began his studies, under the direction of Hadrian Junius and James Cocceius. Antonides took great pleasure in reading the Latin poets, and carefully compared them with Grotius, Heinsius, &c. By this means he acquired a taste for poetry, and enriched his mind with noble ideas. He first attempted to translate some pieces of Ovid, Horace, and other ancients; and, having formed his taste on these excellent models, he at length undertook one of the most difficult tasks in poetry, to write a tragedy: this was intitled *Traxil*, or *The invasion of China*. Antonides, however, was so modest, as not to permit it to

be published. Vondel, who was then engaged in a dramatic piece, which was taken also from some event that happened in China, read Antonides's tragedy; and was so well pleased with it, that he declared, if the author would not print it, he would take some passages out of it, and make use of them in his own tragedy. He accordingly did so; and it was reckoned much to the honour of Antonides, to have written what might be adopted by so great a poet as Vondel was acknowledged to be by all good judges. Upon the conclusion of the peace between Great Britain and Holland, in the year 1674, Antonides wrote a piece, intitled *Bellona aan band*, i. e. "Bellona chained;" a very elegant poem, consisting of several hundred verses. He next wrote an ingenious heroic poem, which he intitled *The River T* (the river on which Amsterdam is built).

Antonides's parents had bred him up an apothecary: but his remarkable genius for poetry soon gained him the esteem and friendship of several persons of distinction; and particularly of Mr Buifero, one of the lords of the admiralty at Amsterdam, and a great lover of poetry, who sent him at his expence to pursue his studies at Leyden, where he remained till he took his degree of doctor of physic, and then his patron gave him a place in the admiralty. In 1678, Antonides married Susanna Bermans, a minister's daughter, who had also a talent for poetry. His marriage was celebrated by several eminent poets, particularly by the famous Peter Francius, professor of eloquence, who composed some Latin verses on the occasion. After marriage, he did not much indulge his poetic genius; and within a few years he fell into a consumption, of which he died on the 18th September 1684, being then but thirty-seven years and a few months old. He is esteemed the most eminent Dutch poet after Vondel. His works have been printed several times, having been collected by father Anthony Tanfz. The last edition was printed by Nicholas Ten Hoom, at Amsterdam, in the year 1714, in 4to, under the direction of David Van Hoogstraaten, one of the masters of the Latin school of that city, who added to it also the life of the poet.

ANTONINUS PIUS, the Roman emperor, was born at Lanuvium in Italy, A. C. 86, of a family originally from Nîmes in Languedoc. His character was in all respects one of the noblest that can be imagined; and he had the title of *Pius* given him by the senate. We have no regular account of the transactions of his reign, since Capitolinus has written in a very confused manner; and we have only an abridgment of Dion Cassius's history by Xiphilin now remaining. He managed the public revenues with great frugality, yet was extremely generous; was fond of peace, and in war preferred the reputation of justice to all the advantages which might be gained by victory. He was more intent upon preserving the bounds of his empire than extending them; and he often made use of Scipio's expression, That he chose rather to save one citizen than kill a thousand enemies. By this conduct he made himself universally esteemed and revered in that age, and admired by posterity. This great and good emperor died in 161, aged 75 years, having reigned 23.

ANTONINUS PHILOSOPHUS (Marcus Aurelius), the Roman emperor, born at Rome, the 26th of April, in the 121st year of the Christian æra. He was called by several names till he was admitted into the Aurelian

Antonides
Antoninus.

Antoninus. ^{lian family,} when he took that of Marcus Aurelius Antoninus. Hadrian, upon the death of Cejonius Commodus, turned his eyes upon Marcus Aurelius; but, as he was not then 18 years of age, and consequently too young for so important a station, he fixed upon Antoninus Pius, whom he adopted, upon condition that he should likewise adopt Marcus Aurelius. The year after this adoption, Hadrian appointed him questor, though he had not yet attained the age prescribed by the laws. After the death of Hadrian, Aurelius married Faustina, the daughter of Antoninus Pius, by whom he had several children. In the year 139, he was invested with new honours by the emperor Pius, in which he behaved in such a manner as endeared him to that prince and the whole people.

Upon the death of Pius, which happened in the year 161, he was obliged by the senate to take upon him the government; in the management of which he took Lucius Verus as his colleague. Dion Cassius says, that the reason of doing this was, that he might have leisure to pursue his studies, and on account of his ill state of health; Lucius being of a strong vigorous constitution, and consequently more fit for the fatigues of war. The same day he took upon him the name of Antoninus, which he gave likewise to Verus his colleague, and betrothed his daughter Lucilla to him. The two emperors went afterwards to the camp; where, after having performed the funeral rites of Pius, they pronounced each of them a panegyric to his memory. They discharged the government in a very amicable manner. It is said that, soon after Antoninus had performed the apotheosis of Pius, petitions were presented to him by the Pagan priests, philosophers, and governors of provinces, in order to excite him to persecute the Christians; which he rejected with indignation, and interposed his authority for their protection, by writing a letter to the common assembly of Asia, then held at Ephesus (A). The happiness which the empire began to enjoy under these two emperors was interrupted, in the year 162, by a dreadful inundation of the Tiber, which destroyed a vast number of cattle, and occasioned a famine at Rome. This calamity was followed by the Parthian war; and at the same time the Catti ravaged Germany and Rhætia. Lucius Verus went in person to oppose the Parthians; and Antoninus continued at Rome, where his presence was necessary.

During this war with the Parthians, about the year 163 or 164, Antoninus sent his daughter Lucilla to Verus, she having been betrothed to him in marriage, and attended her as far as Brundisium: he intended to

have conducted her to Syria; but it having been insinuated by some persons, that his design of going into the east was to claim the honour of having finished the Parthian war, he returned to Rome. The Romans having gained a victory over the Parthians, who were obliged to abandon Mesopotamia, the two emperors triumphed over them at Rome in the year 166; and were honoured with the title of *Fathers of their country*. This year was fatal, on account of a terrible pestilence which spread itself over the whole world, and a famine under which Rome laboured: it was likewise in this year that the Marcomanni, and many other people of Germany, took up arms against the Romans; but the two emperors having marched in person against them, obliged the Germans to sue for peace. The war, however, was renewed the year following, and the two emperors marched again in person; but Lucius Verus was seized with an apoplectic fit, and died at Altinum. The Romans were now defeated with great slaughter; and the emperor, not choosing to burden his subjects with new taxes, exposed to public sale the furniture of the palace, the gold and silver plate belonging to the crown, and his wife's rich garments embroidered with gold, and a curious collection of pearls, which Adrian had purchased during his long progress thro' the provinces of the empire, and was called *Adrian's cabinet*.

In the year 170, Antoninus made vast preparations against the Germans, and carried on the war with great vigour. During this war, in 174, a very extraordinary event is said to have happened, which, according to Dion Cassius, was as follows: Antoninus's army being blocked up by the Quadi, in a very disadvantageous place, where there was no possibility of procuring water; in this situation, being worn out with fatigue and wounds, oppressed with heat and thirst, and incapable of retiring or engaging the enemy, in an instant the sky was covered with clouds, and there fell a vast quantity of rain: the Roman army were about to quench their thirst, when the enemy came upon them with such fury, that they must certainly have been defeated, had it not been for a shower of hail, accompanied with a storm of thunder and lightning, which fell upon the enemy, without the least annoyance to the Romans, who by this means gained the victory (B). In 175, Antoninus made a treaty with several nations of Germany. Soon after, Avidius Cassius, governor of Syria, revolted from the emperor: this insurrection, however, was put an end to by the death of Cassius, who was killed by a centurion named *Anthony*. Antoninus behaved with great lenity towards those who had been engaged in Cassius's party:

(A) Eusebius has preserved this letter, Hist. Eccles. lib. iv. cap. 13. but he falsely ascribes it to Antoninus Pius, whereas it was wrote by Marcus Antoninus, as Valerius makes it appear in his annotations on Eusebius.

(B) The Pagans as well as Christians, according to Mr Tillemont (p. 621. art. xvi.), have acknowledged the truth of this prodigy, but have greatly differed as to the cause of such a miraculous event; the former ascribing it, some to one magician and some to another: In Antoninus's pillar, the glory is ascribed to Jupiter the god of rain and thunder. But the Christians affirmed, that God granted this favour at the prayer of the Christian soldiers in the Roman army, who are said to have composed the twelfth or Melitene legion; and, as a mark of distinction, we are told that they received the title of the *Thundering Legion*, from Antoninus (Euseb. Eccles. Hist. lib. v. cap. 5.) Mr Moyle, in the letters published in the second volume of his works, has endeavoured to explode this story of the Thundering Legion; which occasioned Mr Whiston to publish an answer, in 1726, intitled, *Of the Thundering Legion; or, Of the miraculous deliverance of Marcus Antoninus and his army, upon the prayers of the Christians*.

Antoninus. ty : he would not put to death, nor imprison, nor even sit in judgment himself upon any of the senators engaged in this revolt ; but he referred them to the senate, fixing a day for their appearance, as if it had been only a civil affair. He wrote also to the senate, desiring them to act with indulgence rather than severity ; not to shed the blood of any senator or person of quality, or of any other person whatsoever, but to allow this honour to his reign, that, even under the misfortune of a rebellion, none had lost their lives, except in the first heat of the tumult. In 176, Antoninus visited Syria and Egypt : the kings of those countries, and ambassadors also from Parthia, came to visit him. He staid several days at Smyrna ; and, after he had settled the affairs of the east, went to Athens, on which city he conferred several honours, and appointed public professors there. From thence he returned to Rome with his son Commodus, whom he chose consul for the year following, though he was then but 16 years of age, having obtained a dispensation for that purpose. On the 27th of September, the same year, he gave him the title of *Imperator* ; and on the 23d of December, he entered Rome in triumph, with Commodus, on account of the victories gained over the Germans. Dion Cassius tells us, that he remitted all the debts which were due to himself and the public treasury during 46 years, from the time that Hadrian had granted the same favour, and burnt all the writings relating to those debts. He applied himself likewise to correct many enormities, and introduced several excellent regulations. In the year 179, he left Rome with his son Commodus, in order to go against the Marcomanni, and other barbarous nations ; and the year following gained a considerable victory over them, and would, in all probability, have entirely subdued them in a very short time, had he not been taken with an illness, which carried him off on the 17th of March 180, in the 59th year of his age, and 19th of his reign. The whole empire regretted the loss of so valuable a prince, and paid the greatest regard to his memory : he was ranked amongst the gods, and almost every person had a statue of him in their houses. His book of meditations has been much admired by the best judges.

ANTONINE'S Column. See COLUMN.

ANTONINUS'S Wall, the name of the third rampart or defence that had been built or repaired by the Romans against the incursions of the North Britons. It is called by the people in the neighbourhood, *Graham's Dyke*; from the notion that one Graham, or Grimus, first made a breach in it after the retreat of the Romans out of Britain. The first barrier erected by the Romans was the chain of forts made by Agricola * from the frith of Forth to that of Clyde, in the year 81, to protect his conquests from the inroads of the Caledonians. The second was the vallum, or dyke, flung up by Adrian † in the year 121. It terminated on the western side of the kingdom at *Axelodunum*, or *Brugh*, on the Solway sands, and was supposed to have reached no further than *Pons Ælii*, or *Newcastle*, on the eastern. But from an inscription lately discovered, it appears to have extended as far as the wall of Severus ‡. This rampart of Adrian's was situated much farther south than Agricola's chain ; the country to the north having been either, according to some authors, recovered by the native Britons after the departure of Agricola ; or, ac-

cording to others, voluntarily slighted by Adrian. However, this work of Adrian's did not long continue to be the extreme boundary of the Roman territories to the north in Britain. For Antoninus Pius, the adopted son and immediate successor of Adrian, having, by his lieutenant Lollius Urbicus, recovered the country once conquered by Agricola, commanded another rampart to be erected between the friths of Forth and Clyde, in the tract where Agricola had formerly built his chain of forts. The great number of inscriptions which have been found in or near the ruins of this wall, or rampart, to the honour of Antoninus Pius, leave us no room to doubt its having been built by his direction and command. If the fragment of a Roman pillar with an inscription, now in the college library of Edinburgh, belonged to this work, as it is generally supposed to have done, it fixes the date of its execution to the third consulship of Antoninus, which was A. D. 140, only 20 years after that of Adrian, of which this seems to have been an imitation. This wall or rampart, as some imagine, reached from Caer-riden on the frith of Forth to Old Kirkpatrick on the Clyde ; or, as others think, from Kinniel on the east to Dunglass on the west. These different suppositions hardly make a mile of difference in the length of this work, which, from several actual mensurations, appears to have been 37 English or 40 Roman miles. Capitolinus, in his life of Antoninus Pius, directly affirms, that the wall which that emperor built in Britain was of turf. This in the main is unquestionably true ; though it is evident (from the vestiges of it still remaining, which not very many years ago were dug up and examined for near a mile together) that the foundation was of stone. Mr Camden also tells us, from the papers of one Mr Anthony Pont, that the principal rampart was faced with square stone, to prevent the earth from falling into the ditch. The chief parts of this work were as follows: 1. A broad and deep ditch, whose dimensions cannot now be discovered with certainty and exactness, tho' Mr Pont says it was 12 feet wide. 2. The principal wall or rampart was about 12 feet thick at the foundation, but its original height cannot now be determined. This wall was situated on the south brink of the ditch. 3. A military way on the south side of the principal wall, well paved, and raised a little above the level of the ground. This work, as well as that of Adrian, was defended by garrisons placed in forts and stations along the line of it. The number of these forts or stations, whose vestiges were visible in Mr Pont's time, were 18, situated at about the distance of two miles from each other. In the intervals between the forts, there were turrets or watch-towers. But the number of these, and their distance from each other, cannot now be discovered.

It is not a little surprising, that though it is now more than 1600 years since this work was finished, and more than 1300 since it was slighted, we can yet discover, from authentic monuments, which are still remaining, by what particular bodies of Roman troops almost every part of it was executed. This discovery is made from inscriptions upon stones, which were originally built into the face of the wall, and have been found in or near its ruins, and are carefully preserved. The number of stones with inscriptions of this kind now extant, is 11 : of which six may be seen at one view

* See Agricola.

† See Adrian.

‡ See Severus.

Antoninus, in the college of Glasgow, one in the college of Aberdeen, one in the college of Edinburgh, one in the collection of Baron Clerk, one at Cochnoch-house, and one at Calder-house. From these inscriptions it appears in general, that this great work was executed by the second legion, the vexillations of the sixth legion and of the twentieth legion, and one cohort of auxiliaries. If these corps were all complete, they would make in all a body of 7800 men. Some of these inscriptions have suffered greatly by the injuries of time and other accidents; so that we cannot discover from them with absolute certainty, how many paces of this work were executed by each of these bodies of troops. The sum of the certain and probable information contained in these inscriptions, as it is collected by the learned and illustrious Mr Horsley, stands thus:

	Paces.
The second legion built	11,603
The vexillation of the sixth legion	7,411
The vexillation of the twentieth legion	7,801
All certain	26,815
The vexillation of the twentieth legion, the monument certain, and the number probable	3,411
The same vexillation, on a plain monument, no number visible, supposed	3,500
The sixth legion, a monument, but no number, supposed	3,000
Cohors prima Cugernorum	3,000
Total	39,726

or 39 miles 726 paces, nearly the whole length of the wall. It would have been both useful and agreeable to have known how long time these troops were employed in the execution of this great work. But of this we have no information. Neither do we know what particular bodies of troops were in garrison in the several forts and stations along the line of this wall, because these garrisons were withdrawn before the *Notitia Imperii* was written.

Dio. l. 72.
p. 820.

Though we cannot discover exactly how many years this wall of the emperor Antoninus continued to be the boundary of the Roman territories in Britain, yet we know with certainty that it was not very long. For we are told by an author of undoubted credit, that, in the reign of Commodus, A. D. 180, "he had wars with several foreign nations, but none so dangerous as that of Britain. For the people of the island, having passed the wall which divided them from the Romans, attacked them, and cut them in pieces."

ANTONIO (Nicholas), knight of the order of St James and canon of Seville, did great honour to the Spanish nation by his *Bibliothèque* of their writers. He was born at Seville in 1617, being the son of a gentleman whom king Philip IV. made president of the admiralty established in that city in 1626. After having gone through a course of philosophy and divinity in his own country, he went to study law at Salamanca; where he closely attended the lectures of Francisco Ramos del Manzano, afterwards counsellor to the king and preceptor to Charles II. Upon his return to Seville, after he had finished his law studies at Salamanca, he shut himself up in the royal monastery of Benedictines, where he employed himself several years in writing his *Bibliotheca Hispanica*, having the use of the books of

Bennet de la Sana abbot of that monastery and dean of the faculty of divinity at Salamanca. In the year 1659, he was sent to Rome by king Philip IV. in the character of agent-general from this prince: he had also particular commissions from the inquisition of Spain, the viceroys of Naples and Sicily, and the governor of Milan, to negotiate their affairs at Rome. The cardinal of Arragon procured him, from Pope Alexander VII. a canonry in the church of Seville, the income whereof he employed in charity and purchasing of books: he had above 30,000 volumes in his library. By this help, joined to continual labour, and indefatigable application, he was at last enabled to finish his *Bibliotheca Hispanica*, in four volumes in folio, two of which he published at Rome in the year 1672. The work consists of two parts; the one containing the Spanish writers who flourished before the 15th century, and the other those since the end of that century. After the publication of these two volumes, he was recalled to Madrid by king Charles II. to take upon him the office of counsellor to the crusade; which he discharged with great integrity till his death, which happened in 1684. He left nothing at his death but his vast library, which he had brought from Rome to Madrid; and his two brothers and nephews being unable to publish the remaining volumes of his *Bibliotheca*, sent them to Cardinal d'Aguisne, who paid the charge of the impression, and committed the care thereof to Monsieur Marti, his librarian, who added notes to them in the name of the cardinal.

ANTONIO (St), one of the Cape de Verd islands, lying in E. Long. 0. 26. N. Lat. 18. 10. It is separated from St Vincent's by a clear navigable channel two leagues in breadth. On the north side, it has a good road for shipping, with a collection of fresh water rising from springs, which, however, scarcely merits the name of a pond. The island stretches from north-east to south-west, and is filled with mountains; one of which is of so extraordinary a height, as to be compared with the Peak of Teneriffe: Its top is constantly covered with snow, and, notwithstanding the clearness of the sky, is generally hid in clouds. Here are produced a variety of fruits; oranges, lemons, palms, melons, &c. and some sugar-canes. The potatoes and melons are particularly excellent, and are much sought after by mariners. But notwithstanding all this plenty, the inhabitants live in the most wretched poverty. They are in number about 500, chiefly negroes, under the protection of the Portuguese, whose language they speak, and imitate their manners. To the north-west stands a village, containing about 20 huts, and at least 50 families, under the direction of a governor, or, as they call him, a *captain*, a priest, and a schoolmaster.

ANTONIO (St), a Dutch fort in Axim, on the gold coast of Africa. It stands on a high rock, which projects into the sea in form of a peninsula; and is so environed by rocks and dangerous shoals, as to be inaccessible to an enemy but by land, where it is fortified by a parapet, draw-bridge, and two batteries of heavy cannon. Besides this it has a battery towards the sea. The three batteries consist of 24 cannon. Its form is triangular; the building is neat, strong, and commodious for the extent, that being but small, on account of the narrowness of the rock on which it is built. The garrison is usually composed of 25 white men, and an equal number of negroes, under the command of a serjeant.

Antonius.

jeant. It is maintained at the expence of the West-India Company; and when well stored with provisions, is capable of making a long defence against any number of negroes. It is, however, as well as all other forts on this coast, liable to inconveniences from the heavy and continual rains, which damage the walls, and render frequent reparations necessary. This obliges the Dutch always to keep a ready quantity of lime or cement made of calcined oyster-shells, of which the coast produces great numbers.—This settlement was first founded by the Portuguese during the reign of Emanuel. They fixed it first upon a small point; where, finding themselves insecure, they built the fort where it now stands. They were driven out by the Dutch in 1642; and, upon the conclusion of a peace with the States-general, the fort remained by treaty in the hands of the Dutch West-India Company, who have kept possession of it ever since.

ANTONIUS (Marcus), a famous Roman orator. While he filled the office of prætor, Sicily fell to his lot, and he cleared the seas of the pirates which infested that coast. He was made consul with A. Posthumus Albinus, in the year of Rome 653; when he opposed the turbulent designs of Sextus Titus, tribune of the people, with great resolution and success. Some time after, he was made governor of Cilicia, in quality of proconsul; where he performed so many great exploits, that he obtained the honour of a triumph. We cannot admit observing, that, in order to improve his great talent for eloquence, he became a scholar to the greatest men at Rhodes and Athens, in his way to Cilicia, and when on his return to Rome. Soon after, he was appointed censor; which office he discharged with great reputation, having carried his cause before the people, against Marcus Dronius, who had preferred an accusation of bribery against him, in revenge for Antonius's having erased his name out of the list of senators, which this wise censor had done, because Dronius, when tribune of the people, had abrogated a law which restrained immoderate expence in feasts. He was one of the greatest orators ever known at Rome; and it was owing to him, according to the testimony of Cicero, that Rome might boast herself a rival even to Greece itself in the art of eloquence. He defended, amongst many others, Marcus Aquilius; and moved the judges in so sensible a manner, by the tears he shed, and the scars he showed upon the breast of his client, that he carried his cause. He never would publish any of his pleadings, that he might not, as he said, be proved to say in one cause, what might be contrary to what he should advance in another. He affected to be a man of no learning. His modesty, and many other qualifications, rendered him no less dear to many persons of distinction, than his eloquence made him universally admired. He was unfortunately killed during those bloody confusions raised at Rome by Marius and Cinna. He was discovered in the place where he hid himself, and soldiers were sent to dispatch him; but his manner of addressing them had such an effect, that none but he who commanded them, and had not heard his discourse, had the cruelty to kill him. His head was exposed before the rostra, a place which he had adorned with his triumphal spoils. This happened 90 years before the Christian era.

ANTONIUS (Marcus), the triumvir, grandson to
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the former, was very handsome in his youth; for which reason he was greatly beloved by Curio, a senator, who, by carrying him about in all his debaucheries, made him contract such heavy debts, that his own father forbade him his house. Curio, however, was so generous as to bail him for 250 talents. When the civil war broke out, Curio took Cæsar's party, and prevailed with Antonius to do the same; for which he was made a tribune of the people, and in that office did Cæsar great service. Cæsar, having made himself master of Rome, gave Antonius the government of Italy: At the battle of Pharsalia, Cæsar confided so much in him, that he gave him the command of the left wing of his army, whilst he himself led the right. After Cæsar was made dictator, he made Antonius general of the horse, tho' he had never been prætor; in which command he exerted his power with the utmost violence. He was made consul, when Cæsar enjoyed that honour for the fifth time, the last year of that usurper's life. On Cæsar's death, he harangued the populace with great art, and raised their fury against his murderers: flattering himself that he should easily get into the place which Cæsar had filled; but his haughty behaviour made him lose all the advantages his affected concern for Cæsar had gained him. His ill treatment of Octavius, and quarrel with him, produced another civil war; which ended in an accommodation between him, Octavius, and Lepidus, fatal to the peace of Rome. They agreed to share the supreme power among them; and many of the most illustrious Romans were sacrificed by proscription to cement this bloody league, which is known by the name of the *Second Triumvirate*. But the triumvirs were too ambitious, and hated one another too much, to be long united. Antonius went into Asia to raise money for his soldiers; during his absence, Fulvia his wife quarrelled with Octavius. When Antonius was in Asia, indulging himself in all manner of luxury, the famous Cleopatra inspired him with the most violent passion. Hearing of the quarrel between Fulvia and Octavius, and finding Octavius was become publicly his enemy, Antonius entered into a confederacy with Sextus Pompeius, who was still master of Sicily. He then went into Italy, in order to fight Octavius; but Fulvia, who had been the author and promoter of this war, dying, Octavius and Antonius came to an agreement. One of the conditions of this new peace was, that they should together attack Pompey, though the former had lately made an alliance with him. Antonius then married Octavia, sister to Octavius, as a pledge of their renewed friendship; but returned soon after to his beloved Cleopatra, and again lived with her in Alexandria. Octavius took hold of this pretence to inveigh against him, and begin the war again. At last they engaged in a sea-fight at Actium, in which Octavius gained a complete victory; which was followed by the deaths both of Antonius and Cleopatra. The infatuated Antonius fell upon his own sword; and Cleopatra stung herself to death with an asp, as was supposed, to avoid gracing the victor's triumph at Rome.

ANTONOMASIA, a form of speech, in which, for a proper name, is put the name of some dignity, office, profession, science, or trade; or when a proper name is put in the room of an appellative. Thus a king is called his *majesty*; a nobleman, his *lordship*. We say the *philosopher* instead of Aristotle, and the *pra-*

O

tor

Antonius,
Antonomasia.

Antosian-
drians,
Antrim.

tor for Cicero: Thus a man is called by the name of his country, a *German*, an *Italian*; and a grave man is called a *Cato*, and a wise man a *Solomon*.

ANTOSIANDRIANS, a sect of rigid Lutherans, who oppose the doctrine of Osiander relating to justification. These are otherwise denominated *Osiandromassiges*.—The Antosiadrians deny that man is made just, with that justice wherewith God himself is just; that is, they assert, that he is not made essentially, but only imputatively, just; or, that he is not really made just, but only pronounced so.

ANTRIM, the most northerly county of Ireland. It is bounded by that of Down on the south-east, that of Londonderry on the west, from which it is separated by the river Bann, part of Armagh on the south, St George's channel on the east, and the Deucaledonian ocean on the north. Its greatest length is about 46 miles, its greatest breadth about 27; and the number of acres it contains, plantation-measure, are computed at 383,000. Though the country is much incumbered with bogs and marshes, yet it enjoys a pretty good air, and is well peopled, chiefly with Protestants. Where it is free from bogs the soil is fruitful. It sends two members for the shire, and two for each of the following towns, viz. Lisburn, Belfast, Antrim, and Randalstown.

Certain narrow valleys, called *glyns*, beginning here, and running a great way along the coast, belonged formerly to the Bissets, noblemen of Scotland, who, having been obliged to quit that country for having assassinated Patrick earl of Athol upon a private quarrel, came hither, and had a great estate bestowed upon them by Henry III. of England; of which, in the reign of Edward II. a part was forfeited by the rebellion of Hugh, then chief of the family. Another tract near this, called the *Rowte*, belonged anciently to the Macguillers, but now to the M'Donnells earls of Antrim.

Upon the coast of this country are the promontories called by Ptolemy, *Robogdium*, *Vennicinium*, and *Boreum*, now *Fair Foreland*, *Ramshead*, and *St Helen's-head*. The river also, styled by the same author *Vidua*, and now *Crodach*, runs through this county.—Here also is the remarkable natural curiosity called the *Giant's-Causeway*, for a particular description of which see that article.

ANTRIM, the capital town of the county of Antrim, in Ireland, seated at the north end of the lake Lough-Neagh, about six miles from the mouth of the bay, having a good road before it, with a pier near the place, within which vessels lie dry at low water. It was anciently a borough of great consequence, as appears from the mayor's being admiral of a considerable extent of coast, as well in Down as in this county; the corporation enjoying the customs paid by all vessels within those bounds, the creeks of Bangor and Belfast only excepted. This grant, however, the crown repurchased, and thereupon transferred the custom-house to Belfast, to which town it is now much inferior as well in size as in trade. It is, however, still a place of note, and sends two members to the house of commons. It gives the title of *earl* to the noble family of M'Donnell.—At Antrim is a seat, with noble demesnes, and beautiful and highly cultivated lands, of the earl of Massareene. W. Long. 6. 26. N. Lat. 54. 45. It sends two members to parliament.

ANTRUM, among anatomists, a term used to denote several cavities of the body: as the *antrum highmorianum*, or that in the maxillary or jaw-bone; *antrum pylori*, or that at the bottom of the pylorus, &c.

ANTWERP, a city of the duchy of Brabant, in the Austrian Netherlands, capital of the marquisate of Antwerp, otherwise called the *marquisate of the holy Roman empire*, situated in E. Long. 4. 15. N. Lat. 51. 12. It lies in a low marshy ground on the Scheld, 24 miles from Brussels to the north. It is the third city in rank in Brabant, large and well built, containing 22 squares, and above 200 streets, all straight and broad, especially that called the *Mere*, in which six coaches can go abreast. Most of the houses are of free-stone, and have an air of antiquity, being high, with courts before and gardens behind. At the head of the Mere is a crucifix of brass thirty-three feet high. The cathedral dedicated to the Virgin Mary, the stadt-house, and the exchange, are magnificent structures: the latter is the first building of that kind in Europe, and on its model the exchanges of London and Amsterdam are built. Its pillars are all of blue marble, and carved, but all in a different manner. The exchange cost the city 300,000 crowns. Antwerp, towards the end of the fifteenth century, was one of the most celebrated towns that ever existed. The Scheld, on which it stands, being 20 feet at low water, and rising 20 feet more at flood, ships of the greatest burden came up to the keys, as in the river Thames at London; but when the United Provinces formed themselves into a free state, after having shaken off the yoke of Spain, they got the entire command of the navigation of the Scheld; which ruined the trade of Antwerp, and transferred it to Amsterdam. This made the inhabitants turn their heads to painting, jewelling, and banking, which they have continued to this day with great success and reputation; for at Antwerp bills of exchange may be negotiated for any sum to any part of Europe; and in the time of Queen Anne's wars, two brothers of the name of De Kining, paid the one the army of France, and the other that of the confederates. Besides, here is a fine manufacture of tapestry and lace; and, for the promoting of trade, an insurance company has been erected. This city is the see of a bishop, who, as abbot of St Bernard, is the second prelate in Brabant. The bishopric is of great extent, and the cathedral a most noble pile, with one of the finest steeples in the world. The emperor Charles V. when he made his entry into Antwerp, said it ought to be put in a case, and showed only once a year for a rarity. The house of the hanse-towns, built when the city was in its flourishing condition, is a stately building, with magazines above for dry goods, and cellars below for wet, and in the middle story were 300 lodging-rooms for merchants; but now it is turned to a horse barrack. There is a market here called the *Friday's market*, because it is held every Friday, where all sorts of household goods, pictures, and jewels, are sold by auction. No city in the Netherlands has so many and so fine churches as this. Many of them, particularly the cathedral and Jesuits church, are adorned with paintings, by Sir Peter Paul Rubens, who was a native of this city; and by Quintia Masseys, who is said to have been a blacksmith; but having fallen in

Antrum,
Antwerp.

love

Antwerp. love with a painter's daughter, and been told by her father, when he asked her of him in marriage, that he would have none but a painter for his son-in-law, he went to Italy to study painting, and, in a few years, returned so eminent in his new profession, that he found no difficulty in obtaining the father's consent. He is interred at the entry of the cathedral, where his effigy is put up, with an inscription, signifying, that conjugal love made an Apellus of a blacksmith. The above mentioned Jesuits church is extremely magnificent, and the chapel of the Virgin, joining to it, still more so. Among the cloisters the most remarkable are, the noble and rich abbey of St Michael, on the banks of the Scheld, the apartments of which are truly royal, and in which all sovereign princes that pass this way actually lodge; and the English nunnery, of the order of St Teresa, the nuns of which never wear linen, nor eat flesh, and lie upon straw: the grates of the convent are so dismal, that it looks like a prison. As to the fortifications of the city, it is environed with a fine wall, planted with rows of trees on each side, with walks between, broad enough for two coaches to go abreast, being also defended by a very strong, large, regular citadel, in form of a pentagon, erected by the Duke of Alva in 1568, which commands the town and the neighbouring country. The magistracy of this city is chosen only out of the seven patrician families; and consists of two burgomasters and 18 echevins, besides inferior magistrates. Among the privileges granted to it by its princes, there is one by which every person born in it is a citizen, though both his father and mother were foreigners.

In 1585, Antwerp underwent a remarkable siege by the Duke of Parma. It was then the most wealthy city in the Netherlands, and had long been the object of his designs; but the difficulties attending the enterprize obliged him to postpone it for a considerable time. In order to succeed, it was necessary to cut off the communication of the city with Holland, Ghent, and all places above and below Antwerp on the Scheld. To effect this, he laid siege to Lifkenshouk and Tillo, places of the utmost consequence to the security and commerce of the city: both were obstinately defended; and the siege of the latter was raised, after it had been carried on for three months: however, the Duke gained several other posts on the river, where he built forts, and greatly annoyed the shipping and trade of the city. He next laid siege to Dendermonde, in order to cut off the communication with Ghent, in which he succeeded by the reduction of the town. His next attempt was on Vilvorde: this place he took by assault, and thereby cut off the communication with Brussels. Finding, however, this method of hemming in the city tedious, and ineffectual while an opening to the mouth of the river remained, he formed a design of building a bridge across the Scheld, the extremities of which were to be defended by strong forts and out-works. He began with collecting great quantities of wood at Callo and fort St Philip, where he intended the bridge should be built; but his project was for some time retarded by the Antwerpens, who broke down the dykes, overflowed the whole country, and carried off his magazines by the inundation. Not discouraged by this loss, he applied himself diligently to repair it, and with incredible

expedition cut a canal from Steken to Callo, by which he carried off the waters. He then set to work upon the bridge, and finished it in seven months, without any interruption from the Zealanders. During the building of this bridge. Aldegonde, governor of Antwerp, proposed to build a fort on Couvensteyn dyke, in order to secure that important post, and then breaking down the dyke when the bridge was near finished: but he was violently opposed by certain citizens, who apprehended that their lands and villas would be destroyed by the inundation. This unseasonable opposition, with the negligence of the magistrates, who, because the markets were high, had not laid in a sufficient stock of corn, occasioned the loss of the city. However, in despite of all the Duke of Parma's precautions, the Zealanders found means to throw in a convoy of corn; but the citizens, knowing they would not run the risk of carrying it back again, so cheapened the price, that these bold traders refused ever to bring their goods again to so bad a market. The Antwerpens, having thus through avarice brought on their ruin, began in a short time to suffer by famine; they then pressed the Zealanders to attempt something for their relief, but it was now too late. While the magistrates were deliberating on some means for destroying the bridge, which they might have prevented from being ever completed, one Ginebelli, a Mantuan engineer, offered his service, undertaking at a certain expence to blow it into the air. Even in this extremity the expence was grudged: but necessity at last overcame this obstacle; Ginebelli was furnished with two large vessels, a number of small boats, and every thing necessary. He formed the two large vessels into fire-ships, which he set adrift with the stream, deceiving the enemy by means of false fires lighted up in the fleet of small boats. The train of one of the fire-ships was expended before the time expected and she blew up with a terrible explosion, but with little damage to the bridge. The other was more successful, carrying off all the out-works, setting fire to the whole bridge, and burying above 500 soldiers in the ruins it made. The fire, however, was soon extinguished, and the bridge repaired by the Duke of Parma, while the Antwerpens were prevented by avarice from repeating the experiment; so that they were soon reduced to the greatest straits, and obliged to surrender. It is said that the city of Amsterdam had obstructed every measure for the relief of Antwerp, hoping to profit by its destruction. It was not doubted but the Protestants would forsake it as soon as it fell into the hands of an arbitrary Catholic prince; and this conjecture was soon fulfilled by the removal of many families with their effects to Amsterdam.—After the battle of Ramillies, the city of Antwerp surrendered to the Duke of Marlborough. It was taken by the French in 1746, but restored to the house of Austria at the treaty of Aix-la-Chapelle.

ANUBIS, a symbolical deity of the Egyptians, was regarded as the faithful companion of Osiris and of Isis. Temples and priests were consecrated to him, and his image was borne in all religious ceremonies.

Cynopolis, the present Minich, situated in the lower Thebais, was built in honour of Anubis. The temple wherein he was worshipped no longer subsists. The priests celebrated his festivals there with great pomp,

Antwerp,
Anubis.

Anubis.

and consecrated the dog to him as his living representation. "Anubis (says Strabo) is the city of dogs, the capital of the Cynopolitan prefecture. These animals are fed there on sacred aliments, and religion has decreed them a worship." An event, however, related by Plutarch, brought them into considerable discredit with the people. Cambyfes having slain the god Apis, and thrown his body into a field, all animals respected it except the dogs, which alone eat of his flesh. This impiety diminished the popular veneration for them.

Cynopolis was not the only city which burned incense on the altars of Anubis. He had chapels in almost all the temples. On solemnities, his image always accompanied those of Isis and Osiris. Rome having adopted the ceremonies of Egypt, the emperor Commodus, to celebrate the Isiac feasts, shaved his head, and himself carried the god Anubis. The statue of this god was either of massive gold or gilt, as well as the attributes that accompanied him. Anubis signifies *gilded*. The denomination was mysterious; and the Egyptian priests, it would seem, had not given it without reason.

The signification of this emblematical deity is thus explained by Plutarch; "The circle which touches and separates the two hemispheres, and which is the cause of this division, receiving the name of *horizon*, is called *Anubis*. He is represented under the form of a dog, because that animal watches day and night." St Clements of Alexandria, who was well informed in the mystic theology of the Egyptians, favours this explanation. The two dogs, says he, (the two Anubis) are the symbols of two hemispheres which environ the terrestrial globe. He adds in another place: Others pretend that these animals, the faithful guardians of men, indicate the tropics, which guard the sun on the south and on the north like porters.

According to the former of these interpretations, the priests, regarding Anubis as the horizon, gilded his statue; to mark, that this circle, receiving the first rays of the sun, appears sparkling with brightness on his rising, and that at his setting he reflects his last rays upon the earth. They said in their sacred fables, that Anubis was the son of Osiris, but illegitimate. In fact, he only gives to the earth a borrowed light; and cannot be esteemed, like Horus, as the father of the day, or as the legitimate offspring of Osiris. It may be added, that the visible horizon turning with the sun, is his inseparable companion.

In the latter of these explications, where Anubis represents the tropics, he is also the faithful guardian of Isis and Osiris. In fact, the course of the sun and of the moon is contained between the circles wherein the solstices are performed. They neither deviate to the right nor left. These limits assigned by the Author of nature might therefore, in hieroglyphic language, be represented by a divinity with the head of a dog, who seemed to oppose their passage on the side of the two poles. The other opinion, notwithstanding, seems more natural, and to be more analogous to the ideas of the priests.

Upon the whole, it is reasonable to imagine, that Anubis at first was only a symbolical image, invented by astronomers to give a sensible expression of their discoveries; that afterwards, the people, accustomed to see it in their temples, which were the depositories

of science, adored it as a deity; and that the priests favoured their ignorance by connecting it with their religion. The worship of Anubis introduced, that of the dog became his emblem. Almost all the gods of the Gentiles have originated in this manner.

ANUS, in anatomy, the lower extremity of the intestinum rectum, or orifice of the fundament.

ANVIL, a smith's utensil, serving to place the work on to be hammered or forged. The face or uppermost surface of the anvil, must be very flat and smooth, without flaws, and so hard that a file will not touch it. At one end there is sometimes a pike, bickern or beak-iron, for the rounding of hollow work. The whole is usually mounted on a firm wooden block.—Forged anvils are better than those of cast work, and the best have the upper part made of steel. Locksmiths have a smaller kind of anvil called the *flake*, which is moveable, and placed ordinarily on their work-bench. Its use is for setting small cold work straight, or to cut or punch on with the cold chisel or cold punch.

ANXUR, (anc. geog.), a city of the Volsci, in Latium; called *Tarracina*, by the Greeks and Latins: Now *Terracina*; situated on an eminence (Livy, Horace, Sil. Italicus). *Anxuras*, a citizen of Anxur (Livy). And the epithet *Anxurus*, a name of Jupiter, worshipped without a beard at Anxur (Virgil). Tho' others read *Anxurus*, or *Axyrus*, without a razor. E. Long. 14. 5. Lat. 41. 18.

AONIDES, in mythology, one of the many appellations of the muses; so called from Aonia, a part of ancient Bœotia.

AORASIA, in antiquity, the invisibility of the gods. The word is Greek, *αορασια*, and derived from *α*, priv. and *οραω*, to see. The opinion of the ancients with regard to the appearance of the gods to men, was, that they never showed themselves face to face, but were known from their backs as they withdrew. Neptune assumed the form of Calchas to speak to the two Ajaxes; but they knew him not till he turned his back to leave them, and discovered the god by his majestic step as he went from them. Venus appeared to Æneas in the character of a huntress: but her son knew her not till she departed from him; her divinity was then betrayed by her radiant head, her flowing robe, and her majestic pace.

AORIST, among grammarians, a tense peculiar to the Greek language, comprehending all the tenses; or rather, expressing an action in an indeterminate manner, without any regard to past, present, or future.

AORISTIA, in the sceptic philosophy, denotes that state of the mind wherein we neither assert nor deny any thing positively, but only speak of things as seeming or appearing to us in such a manner. The aoristia is one of the great points or terms of scepticism, to which the philosophers of that denomination had continual recourse by way of explication, or subterfuge. Their adversaries, the Dogmatists, charged them with dogmatizing, and asserting the principles and positions of their sect to be true and certain.

AORNUS, a very high rock of India, having its name from its extraordinary height, as being above the flight of a bird. Its circuit was about 25 miles, its height 11 furlongs, and the way leading up to the top artificial and narrow. At the bottom, on one side, ran the

Anus

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Aornus.

Aornus
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Aousta.

the river Indus; on the top was a fine plane, part of which was covered with a thick wood; the rest arable land, with a fountain furnishing abundance of excellent water. This rock was taken by Alexander the Great, in whose time there was a report that Hercules had attempted it in vain; however, according to Arrian, this report was without foundation. It is probable indeed, that it was raised after the place was taken, in order to magnify Alexander's exploit. While the Macedonian monarch was preparing all things necessary for the siege, an old man with his two sons, who had long lived in a cave near the summit, came and offered to show him a private way of ascending. This being readily accepted, Ptolemy, with a considerable body of light-armed troops, was dispatched with them, with orders, in case they succeeded, to entrench themselves strongly upon the rock, in the wood to which the old man was to direct them, before they ventured to attack the Indians. Ptolemy exactly executed his orders; and gave notice, by a lighted torch set upon a pole, that he had got safely up. Upon this, Alexander gave immediate orders for a body of troops to attempt the passage by which the rock was commonly ascended; but they were repulsed with great slaughter. He then sent an Indian with letters to Ptolemy, desiring him, the next time an attack was made by the common way, to fall upon the enemy behind. But in the mean time, those who defended the rock attacked Ptolemy with great vigour; but were at last repulsed, though with much difficulty; but the next day, when Alexander renewed the attack, though Ptolemy attacked the Indians in the rear, the Macedonians were repulsed on both sides. At last, the king perceiving that the strength of the Indians lay in the straitness and declivity of the way by which they were attacked, caused a great quantity of trees to be felled, and with them filled the cavities between the plain on which the Indians were encamped and the highest of his own advanced posts. The Indians at first derided his undertaking; but at length perceiving the ardour with which the work was carried on, and having felt the effects of the missile weapons of the Macedonians, they sent deputies to propose terms of capitulation. Alexander, suspecting that their design was only to amuse him till they made their escape, withdrew his guards from the avenues. As soon as he knew the Indians were descended, he, with 700 of Ptolemy's light-armed foot, took possession of the deserted rock, and then made a signal for his forces to fall upon the flying Indians. They, setting up a loud shout, so terrified the fugitives, that numbers of them fell from the rocks and precipices, and were dashed to pieces, while the greatest part of the remainder were cut off in the roads.

AORTA, in anatomy, the great artery which rises immediately from the left ventricle of the heart, and is from thence distributed to all parts of the body. It is divided into two grand trunks, distinguished by the epithets *ascending* and *descending*. See **ANATOMY**.

AOSTA, or **AOST**, a town of Italy, in Piedmont, and capital of the duchy of the same name, a bishop's see, and subject to the king of Sardinia. It is remarkable for several monuments of the Romans, and for the birth of Anselm archbishop of Canterbury. It is seated at the foot of the Alps, on the river Doria. E. Long. 7. 33. N. Lat. 45. 38.

AOSTA, a territory of Piedmont, with the title of a duchy. It is a valley 30 miles in length, and extends from the pass of St Martin's, near the frontiers of Yvree, to St Bernard. It abounds in pastures, and all sorts of fruits. The capital is of the same name.

AOUTA, the name of the paper mulberry-tree at Otaheite, in the South Sea, from which a cloth is manufactured, that is worn by the principal inhabitants. See the article **BARK**.

APACHES, a people of New Mexico in North America. They are brave, resolute, and warlike, fond of liberty, and the inveterate enemies of tyranny and oppression. Of this disposition the Spaniards had fatal experience towards the end of the last century, when they revolted against the Catholic king, massacred several of his officers, and committed the greatest devastations. Ever since, they have remained the allies, not the subjects of the Spaniards; and the viceroy of Mexico has been obliged to maintain a more formidable garrison, and a greater number of troops.

APÆDUSIA, denotes ignorance or unskilfulness in what relates to learning and the sciences. Hence also persons uninstructed and illiterate are called *apædeuta*. The term *apædeuta* was particularly used among the French in the time of Huet; when the men of wit at Paris were divided into two factions, one called by way of reproach *apædeuta*, and the others *eruditi*. The *apædeuta* are represented by Huet as persons who, finding themselves either incapable or unwilling to undergo a severe course of study in order to become truly learned, conspired to decry learning, and turn the knowledge of antiquity into ridicule, thus making a merit of their own incapacity. The *apædeuta* in effect were the men of pleasure; the *eruditi* the men of study. The *apædeuta* in every thing preferred the modern writers to the ancient, to supersede the necessity of studying the latter. The *eruditi* derided the moderns, and valued themselves wholly on their acquaintance with the ancients.

APAGOGÉ, in logic. See **ABDUCTION**.

APAGOGÉ, in the Athenian law, the carrying a criminal taken in the fact to the magistrate. If the accuser was not able to bring him to the magistrate, it was usual to take the magistrate along with him to the house where the criminal lay concealed, or defended himself.

APAGOGÉ, in mathematics, is sometimes used to denote a progress or passage from one proposition to another; when the first having been once demonstrated, is afterwards employed in the proving of others.

APAGOGICAL DEMONSTRATION, an indirect way of proof, by showing the absurdity of the contrary.

APALACHIAN MOUNTAINS, more properly called the *Alleghany Mountains*, have their southern beginning near the bay of Mexico, in the latitude of 30°, extending northerly on the back of the British colonies, and running parallel with the sea-coast to the latitude of 40° north; but their distance from the sea, on the west, is not exactly known, though it is generally thought to be above 200 miles. A great part of these mountains is covered with rocks, some of which are of a stupendous height and bulk; the soil between them is generally black and sandy, but in some places differently coloured, composed of pieces of broken rock and spar,

Aousta
||
Apalachian

Apamea. spar, of a glittering appearance, which seem to be indications of minerals and ores if proper search was made for them. Chestnuts and small oaks are the trees that principally grow on these mountains, with some **Fagus pubescens** and other small shrubs. The grass is thin, mixed with vetch and small pease; and in some places there is very little vegetable appearance.

Fagus pubescens
milla, See
Fagus.

The rocks of the Apalachian mountains seem to engross one-half of the surface. They are mostly of a light grey colour; some are of a coarse-grained marble like alabaster; others, of a metallic lustre: some pieces are in the form of slate, and brittle; others in lumps, and hard: and some appear with spangles, or covered over with innumerable small shining specks, like silver. These frequently appear at the roots of trees when blown down. The different spars are found most on the highest and steepest parts of the hills, where there is little grass and few trees; but the greatest part of the soil between the rocks is generally a dark sandy-coloured kind of mould, and shallow; yet fertile, and productive of good corn, which encourages the Tallipooses, a clan of the Cherokee Indians, to settle among them in latitude 34°: and they are the only Indian nation that has a constant residence upon these mountains.

APAMEA, or APAMIA, the name of several ancient cities.

1. One of Bithynia, formerly called *Myrlea*, from Myrlos, general of the Colophonians: destroyed by Philip, father of Perseus; and given to his ally Prusias, who rebuilt it, and called it *Apamea*, from the name of his queen Apama (Strabo). Stephanus says, that Nicomedes Epiphanes, son of Prusias, called it after his mother; and that it had its ancient name from Myrlea, an Amazon. The Romans led a colony thither (Strabo); called *Colonea Apamena* (Pliny, Apian). The gentilitious name is *Apameus* and *Apamenus* (Trajan in a letter to Pliny).

2. Another *Apamea*, called *Cibotos*, of Phrygia, at some distance from the Meander (Agathodæmon); but by a coin of Tiberius, on the Meander. The name is from Apame, mother of Antiochus Soter, the founder, and the daughter of Artabazus (Strabo). The rise, or at least the increase, of Apamea, was owing to the ruins of Celenæ. The inhabitants were called *Apamiensis*; and, though inland, were worshippers of Neptune. The reason, it has been conjectured, was, that they had suffered often from earthquakes of which he was supposed the author. Mithridates gave an hundred talents toward the restoration of the city; which, it is said, had likewise been overthrown in the time of Alexander. Their tribute-money was remitted to them for five years on the same account under the emperor Tiberius. The subterraneous passage of the Lycus and the other streams showed that the ground had many cavities; and these, it has been surmised, rendered the region very liable to be shaken.

3. A third, on the confines of Parthia and Media, surnamed *Raphane* (Strabo, Pliny).

4. A fourth *Apamea*, a town of Mesene, an island in the Tigris (Pliny, Ammian); where a branch of the Euphrates, called the *Royal River*, falls into the Tigris (Ptolemy).

5. A fifth in Mesopotamia, on the other side the Euphrates, opposite to Zeugma on this side, both found-

ed by Seleucus, and joined by a bridge, from which the latter takes its name (Pliny, Insidor, Characenus).

6. A sixth *Apamea*, now *Famia*, also in Syria, below the confluence of the Orontes and Marfyas; a strong city, and situated in a peninsula, formed by the Orontes and a lake. "It was here (says Strabo) that the Seleucidae had established the school and nursery of their cavalry." The soil of the neighbourhood, abounding in pasturage, fed no less than thirty thousand mares, three hundred stallions, and five hundred elephants; instead of which, the marshes of Famia at present scarcely afford a few buffaloes and sheep. To the veteran soldiers of Alexander, who here reposed after their victories, have succeeded wretched peasants, who live in perpetual dread of the oppressions of the Turks and the inroads of the Arabs.

Apamea was also the ancient name of *Pella*, in the Decapolis.

APANAGE, or APPENNAGE, in the French customs, lands assigned by a sovereign for the subsistence of his younger sons, which revert to the crown upon the failure of male issue in that branch to which the lands are granted.

APANOMIA, a town of Santorin, an island in the Mediterranean Sea, called in this part by some the *Sea of Candia*. It has a spacious harbour, in the form of a half-moon; but the bottom is so deep, that ships cannot anchor there. E. Long. 25. 59. N. Lat. 36. 18.

APANTHROPY, in medicine, denotes a love of solitude, and aversion for the company of mankind. Apanthropy is by some reckoned among the symptoms, by others among the species or degrees, of melancholy; and also passes for an ill indication in leucophlegmatic cases.

APARINE, in botany, a synonyme of the utricularia and several other plants.

APARITHMESIS, in rhetoric, denotes the answer to the protasis or proposition itself. Thus, if the protasis be, *Apellandi tempus non erat*,—The aparithmesis is, *At tecum anno plus vixi*.

APARTISMENUS, in the ancient poetry, an appellation given to a verse, which comprehended an entire sense or sentence in itself. This is sometimes also written *apartemenus*, i. e. suspended, as not needing any following verse.

APATHY, among the ancient philosophers, implied an utter privation of passion, and an insensibility of pain. The word is compounded of *α* priv. and *πάθος*, affection. The Stoics affected an entire apathy: they considered it as the highest wisdom to enjoy a perfect calmness or tranquillity of mind, incapable of being ruffled by either pleasure or pain. In the first ages of the church, the Christians adopted the term *apathy* to express a contempt of all earthly concerns; a state of mortification, such as the gospel prescribes. Clemens Alexandrinus, in particular, brought it exceedingly in vogue; thinking hereby to draw the philosophers to Christianity, who aspired after such a sublime pitch of virtue. Quietism is only apathy disguised under the appearance of devotion.

APATURIA, in antiquity, a solemn feast celebrated by the Athenians in honour of Bacchus. The word is usually derived from *απατη*, fraud. It is said to have been instituted in memory of a fraudulent victory obtained by Melanthus, king of Athens, over Xanthus,

Apanage
||
Apaturia.

Apaulia
||
Apelytes.

king of Bœotia, in a single combat, which they agreed upon, to put an end to a debate between them relating to the frontiers of their countries. Hence Budæus calls it *festum deceptionis*, "the feast of deceit."

Other authors give a different etymology of this feast: They tell us, that the young Athenians were not admitted into the tribes on the third day of the apaturia, till their fathers had first sworn that they were their own children; and that, till that time, they were supposed, in some measure, to be without fathers, *απατορες*; whence the feast, say they, took its name. Xenophon, on the other hand, informs us, that the relations and friends met on this occasion, and joined with the fathers of the young people who were to be received into the tribes; and that from this assembly the feast took its name: that in *απατυρια*, the *α*, far from being a privative, being here a conjunctive, signifies the same thing with *ομν*, together. This feast lasted four days: the first day, those of the same tribe made merry together; and this they called *δορπια*. The second day, which they called *αναρρυσις*, they sacrificed to Jupiter and Minerva. The third day, which they called *κυρειωσις*, such of their young men and maids as were of age were admitted into their tribes. The fourth day they called *επιβδης*.

APAULIA, in antiquity, the third day of a marriage solemnity. It was thus called, because the bride, returning to her father's house, did *απαυλιζεσθαι* *τυ νυμφιω*, lodge apart from the bridegroom. Some will have the apaulia to have been the second day of the marriage, viz. that whereon the chief ceremony was performed; thus called by way of contradistinction from the first day, which was called *προαυλις*. On the day called *απαυλις* (whenever that was), the bride presented her bridegroom with a garment called *απαυληνηρια*.

APE, in zoology, the general English name of a very numerous race of animals, the natural history of which is given at large under the article SIMIA; comprehending *Apes*, properly so called, or such as want tails; and *Monkeys* and *Baboons*, or such as have tails, the former *long*, and the other *short*, ones. See SIMIA.

* Hist. of
Kamfchot-
ka, p. 136.

Sea-APE, a name given by Steller to a marine animal which he saw on the coast of America, and is thus described*. "The head appeared like that of a dog, with sharp and upright ears, large eyes, and with both lips bearded: the body round and conoid; the thickest part near the head: the tail forked; the upper lobe the longest: the body covered with thick hair, grey on the back, reddish on the belly. It seemed destitute of feet. It was extremely wanton, and played a multitude of monkey-tricks. It sometimes swam on one side, sometimes on the other side of the ship, and gazed at it with great admiration. It made so near an approach to the vessel, as almost to be touched with a pole; but if any body moved, it instantly retired. It would often stand erect for a considerable space, with one-third of its body above water; then dart beneath the ship, and appear on the other side; and repeat the same thirty times together. It would frequently arise with a sea-plant, not unlike the bottle-gourd, toss it up, and catch it in its mouth, playing with it numberless fantastic tricks.

APELYTES, Christian heretics in the second century, who affirmed that Christ received a body from

the four elements, which at his death he rendered back to the world, and so ascended into heaven without a body.

APELLA, among physicians, a name given to those whose prepuce is either wanting or shrunk, so that it can no longer cover the glans. Many authors have supposed this sense of the word *Apella* warranted from the passage in Horace, *credat Judeus Apella non ego*. But, according to Salmasius and others, *Apella* is the proper name of a certain Jew, and not an adjective signifying *circumcised*.

APELLES, one of the most celebrated painters of antiquity. He was born in the isle of Cos, and flourished in the time of Alexander the Great, with whom he was in high favour. He executed a picture of this prince, holding a thunderbolt in his hand: a piece, finished with so much skill and dexterity, that it used to be said there were two Alexanders; one invincible, the son of Philip; the other inimitable, the production of Apelles. Alexander gave him a remarkable proof of his regard: for when he employed Apelles to draw Campaspe, one of his mistresses, having found that he had conceived an affection for her, he resigned her to him; and it was from her that Apelles is said to have drawn his Venus Anadyomene.

One of Apelles's chief excellencies was his making his pictures so exactly resemble the persons represented; insomuch that the physiognomists are said to have been able to form a judgment of the person's destiny as readily from his portraits as if they had seen the originals. But what is called *grace* was the characteristic of this artist. His pencil was so famous for drawing fine lines, that Protogenes discovered by a single line that Apelles had been at his house. Protogenes lived at Rhodes: Apelles sailed thither, and went to his house with great eagerness, to see the works of an artist who was known to him only by name. Protogenes was gone from home: but an old woman was left watching a large piece of canvas, which was fitted in a frame for painting. She told Apelles that Protogenes was gone out; and asked him his name, that she might inform her master who had inquired for him. "Tell him (says Apelles) he was inquired for by this person;"—at the same time taking up a pencil, he drew on the canvas a line of great delicacy. When Protogenes returned, the old woman acquainted him with what had happened. That artist, upon contemplating the fine stroke of the line, immediately pronounced that Apelles had been there; for so finished a work could be produced by no other person. Protogenes, however, himself drew a finer line of another colour; and, as he was going away, ordered the old woman to show that line to Apelles if he came again; and to say, "This is the person for whom you are inquiring." Apelles returned, and saw the line: he would not for shame be overcome; and therefore, in a colour different from either of the former, he drew some lines so exquisitely delicate, that it was utterly impossible for finer strokes to be made. Protogenes now confessed the superiority of Apelles, flew to the harbour in search of him, and resolved to leave the canvases with the lines on it for the astonishment of future artists.

Apelles showed great liberality of mind towards Protogenes. With ideas enlarged by education and literature,

Apella,
Apelles.

Apelles. ture, he was incapable of harbouring little jealousies of noble competitors; on the contrary, he was the first who made the works of Protogenes to be valued as they deserved among the Rhodians. He acknowledged that Protogenes was in some respects superior to himself; but that in one particular himself excelled, viz. in knowing when to take his hand from the picture; an art which Protogenes had not yet learned, and therefore over-worked his pieces. Apelles equally disapproved of too elaborate diligence, or too hasty negligence in execution. A studied work of Protogenes he esteemed less on the one account; and on the other, when a silly painter once brought him a picture, and said, "This I painted in a hurry,"—he replied, "Though you had not told me so, I perceived it was painted in haste: but I wonder you could not execute more such pieces in the same time."

There are two stories related of Apelles, which show him to be at once an artist of modesty in amending even trifling improprieties, when pointed out to him by competent judges; and yet of self-confidence sufficient to make him know the perfection and value of his own paintings. It was customary with Apelles to expose to public view the works which he had finished, and to hide himself behind the picture, in order to hear the remarks passed on it by persons who chanced to view it. He once overheard himself blamed by a shoemaker for a fault in the slippers of some picture: he corrected the fault which the man had noticed: but on the day following the shoemaker began to animadvert on the leg; upon which Apelles with some anger looked out from behind the canvass, and bade him keep to his own province, "Ne futor ultra crepidam." It is well known that Alexander forbade any one besides Apelles to paint his portrait. We are not, however, to conclude from this, that Alexander was a more skilful judge of painting than he was of poetry. Like Augustus, he cherished the fine arts more from vanity than taste. A remarkable proof is given of this prince's inability to discern merit, and of the painter's freedom in expressing the mortification he felt, when a work of his was not sufficiently commended. "Alexander (says Ælian, lib. ii. c. 3. Var. Hist.) having viewed the picture of himself which was at Ephesus, did not praise it as it deserved. But when a horse was brought in, and neighed at seeing the figure of a horse in the picture, as though it had been a real horse; *O king!* (said Apelles) *this horse seems to be by far a better judge of painting than you.*" It happened more than once that the horses drawn by him were mistaken for real ones, by living horses which saw and neighed at the pictures. In his finishing a drawing of this animal, a remarkable circumstance is related of him. He had painted a horse returning from battle, and had succeeded to his wishes in describing every other mark that could indicate a mettlesome steed, impatient of restraint; there was wanting nothing but a foam of a bloody hue issuing from the mouth. He again and again endeavoured to express this, but his attempts were unsuccessful. At last, with vexation, he threw against the reins of the horse a sponge which had in it many colours; a mixture of which coming out of the sponge, and tinging the reins, produced the very effect desired by the painter.

The works of Apelles were all admired; but the most celebrated were the picture of Alexander in the

temple of Diana at Ephesus, and that of Venus emerging from the sea. Alexander was drawn with thunder in his hand; and such relief was produced by the chiaroscuro in this piece, that the fingers seemed to shoot forward, and the thunder-bolt to be out of the picture. His Venus *Αναδυομένη* was esteemed the most exquisite figure which the pencil could create: it is therefore extolled by the Roman poets Propertius and Ovid; and the poet of Sidon, Antipater, has left us the following Greek epigram on it:

Τὴν ἀναδυομένην ἀπὸ μαλ' ἑὸς ἀλὶ θαλάττης
Κυπρίν, Ἀπὲλ' αἶψα μοχθὸν ὄρα γραφίδος,
Ὡς χεὶρ συμπαράσσει διαβροχὸν ὑδατὶ κείῃ
Ἐκδίδωκεν ὑπερὸν ἄρρον ἀπὸ πλοκαμῶν,
Αὐταὶ νῦν ἱερῶσιν Ἀθηνῶν τε καὶ Ἡρῆ
"Οὐκ εἴη σοὶ μορφή τις ἐπὶν ἐρχομένη."

Anth. iv. 12.

Graceful as from her natal sea she springs,
Venus, the labour of Apelles, view:
With pressing hand her humid locks she wrings,
While from her tresses drips the frothy dew:
Ev'n Juno and Minerva now declare,
"No longer we contend whose form's most fair."

APENE, in antiquity, a kind of chariot whereon the images of the gods were carried in procession on certain days, attended with a solemn pomp, songs, hymns, dancing, &c. It was very rich, made sometimes of ivory, or of silver itself, and variously decorated.

APENINNUS, now the *Appennine*; a mountain, or ridge of mountains, running through the middle of Italy, from north-west to the south-west for 700 miles, in the form of a crescent (Pliny); beginning at the Alps in Liguria, or the Riviera di Genoa; and terminating at the strait of Messina, or at Reggio, and the promontory Leucopetra; and separating, as by a back or ridge, the Adriatic from the Tuscan sea (Pliny, Strabo, Ptolemy, Polybius, Vitruvius). This mountain, though high, is greatly short of the height of the Alps. Its name is Celtic, signifying a *high mountain*.

APENRADE, a town of Denmark in the duchy of Sleswick, seated at the bottom of a gulph in the Baltic sea, between Flensbourg and Hadafschleben. It is 25 miles north from Sleswick. E. Long. 9. 28. N. Lat. 55. 4.

APENZEL, a town of Switzerland, in the canton of the same name, seated on the river Chuz, E. Long. 9. 1. N. Lat. 47. 31. The canton itself, which was allied to the others in 1513, consists only of three or four valleys; having the town and abbey of St Gall on the north; the county of Toggenburg on the west; the lordship of Sax in the canton of Zurich, and that of Gambs in the canton of Schweiz, on the south; and the Rheinthall, or Rhine-valley, on the east. Its greatest length is about 30 miles, and its breadth about 20. It yields good pasturage, and consequently is not destitute of cattle, milk, butter, or cheese. Considerable quantities also of wheat, rye, barley, oats, beans, pease, flax, and wine, are produced in it; besides a great deal of fruit, wood, and turf; with mineral waters, and warm baths. There are many mountains in the canton, the highest of which is that called the *Hohesant*, or the *Hohes-Mesmer*, which commands a prospect of a prodigious extent. There are also several lakes and rivers. The inhabitants, who are partly Protestants,

Apene

Apenzel.

Apepsia ||
Apex. testants, and partly Roman Catholics, subsist chiefly by their manufactures of linen, crape, fustian, and thread, or by bleaching, and the sale of their cattle, butter, cheese, horses, wood, and coal. Of the twenty-three parishes in the canton, four are Popish, and nineteen Protestant. Before the reformation, the inhabitants were subject to the Abbot of St Gaul; but they then shook off his yoke, and united themselves with the other cantons: after that, however, there were violent animosities between the Papists and Protestants, the former continually persecuting the latter, till at last, in 1587, by the mediation of the other cantons, the two parties came to an accommodation, by which certain districts were assigned to each party, whereas before they lived promiscuously together; and though these two divisions now constitute but one canton, yet each forms a distinct community or free state, sending its particular representatives to the diets of the confederacy, and having its separate councils and officers. In spirituals the Papists are subject to the bishop of Constance, but the Protestants to their own consistory. The militia of the former does not exceed 3000, whereas those of the latter amount to 10,000.

APEPSIA, (from α , neg. and $\psi\omega$, to digest.) Indigestion.

Abstemiousness and excess are alike causes of indigestion. An over-distension of the stomach may in some measure injure its proper tone; and long fasting, by inducing a bad quality in the juices secreted into the stomach, renders it feeble, and generates wind. Hard drinking, and any of the causes of an anorexy, also injure digestion.

The columbo root is said to be particularly useful when the stomach is languid, the appetite defective, digestion with difficulty carried on, or when a nausea with flatulency attends. It is prescribed in substance with any grateful aromatic, or infused in Madeira wine, now and then interposing gentle doses of the tincture of rhubarb.

A mixture of mustard-seed with the columbo root is of admirable utility in complaints of this kind; particularly where acidity and flatulence prevail much in the primæ viæ.

APER, in zoology, a synonyme of the *sus scrofa*. See *Sus*.

APERIENTS, in the materia medica, an appellation given to such medicines as facilitate the circulation of the humours by removing obstructions.—The five aperient roots of the shops are, smallage, fennel, asparagus, parsley, and butcher's broom.

APERTURE, the opening of any thing, or a hole or cleft in any continuous subject.

APERTURE, in geometry, the space between two right lines which meet in a point and form an angle.

APERTURE, in optics, a round hole in a turned bit of wood or plate of tin, placed within the side of a telescope or microscope, near to the object-glass, by means of which more rays are admitted, and a more distinct appearance of the object is obtained.

APERTURES, or *Apertions*, in architecture, are used to signify doors, windows, chimneys, &c.

APETALOSE, or **APETALOUS**, among botanists, an appellation given to such plants as have no flower-leaves.

APEX, the vertex or summit of any thing.

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APEX, in antiquity, the crest of a helmet, but more especially a kind of cap worn by the flamens.

APEX, among grammarians, denotes the mark of a long syllable, falsely called a *long accent*.

APHACA, (anc. geog.) the name of a place in Syria, situated between Heliopolis and Byblus, near Lebanon; infamous for a temple of Venus, called *Aphacitis*, near which was a lake, round which fire usually burst forth, and its waters were so heavy, that bodies floated on them. The temple was destroyed by Constantine, as being a school of incontinence, (Eusebius.) The name is of Syriac origin, signifying *embraces*.

APHÆRESIS, in grammar, a figure by which a letter or syllable is cut off from the beginning of a word. Thus *ciconia* by aphæresis, is written *conia*; *contemnere*, *temnere*; *omittere*, *mittere*, &c.

A like retrenchment at the end of a word is called **APOCOPE**.

APHÆRESIS, in medicine, denotes a necessary taking away or removal of something that is noxious.—In surgery, it signifies an operation whereby something superfluous is taken away.

APHANES: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 35th order, *Sentiosæ*. The essential characters are these: The calyx is divided into eight parts; there is no corolla; the seeds are two, and naked. There is only one species, the *arvensis*, or pensley-piert, a native of Britain. It is extremely common in corn fields. The stalks rise five or six together; they are three inches long, round, hairy, and procumbent: the leaves stand very thick upon them, and are roundish, but divided, as it were, into three parts, and those deeply serrated at their edges. The flowers come out in a double series, arranged all along the branches, and are of a greenish white, and the whole plant is of a greyish or whitish-green colour.

APHASIA, (from α , and $\psi\alpha\iota$, "I speak,") in the sceptic philosophy, denotes a state of doubt, wherein a person not knowing what to determine on, it is best for him to be silent. In this sense, *aphasia* stands opposite to *phasis*, under which are included both assertion and negation.

APHEK, the name of several cities mentioned in scripture. 1. *Aphek* in the tribe of Judah, where the Philistines encamped when the ark was brought from Shiloh, which was taken by them in battle, 1 Sam. iv. 1, 2, &c. It is thought to be the same with *Aphakah* mentioned in Josh. xv. 53. 2. *Aphek* in the valley of Jezreel, where the Philistines encamped while Saul and his army were near Jezreel, upon the mountains of Gilboa, 1 Sam. xxix. 1, &c. 3. *Aphek* a city belonging to the tribe of Asher, near the country of the Sidonians; (Josh. xix. 30. and xiii. 4.) 4. *Aphek* a city of Syria, one of the principal in Benhadad's kingdom, near which the battle was fought between Ahab and Benhadad, wherein the Syrians were worsted; and whereof, as they retreated with precipitation into the city, the walls fell upon them, and crushed in pieces 27,000, (1 Kings xx. 26, *et seq.*) This city lay between Heliopolis and Biblos.

APHELIUM, or **APHELION**, in astronomy, is that point in any planet's orbit, in which it is farthest distant

Apex

||

Aphelium.

Aphiom,
Aphis.

stant from the sun, being that end of the greater axis of the elliptical orbit of the planet most remote from the focus where the sun is.

APHIOM KARAHISSART, a town of Natolia, in Asiatic Turkey; it is named *Aphiom* because it produces a great deal of opium, called *aphiom* by the Turks. E. Long. 32. 18. N. Lat. 38. 35.

APHIS, in zoology, the PUCERON, VINE-FRETTER, or PLANT-LOUSE; a genus of insects belonging to the order of insecta hemiptera. The rostrum or beak of the aphid is inflexed; the antennæ or feelers are longer than the thorax; the wings are four, and erect, or they are wanting; the feet are of the ambulatory kind; and the belly often ends in two horns, from which is ejected that most delicate juice called *Honey-dew*. See *HONEY-dew*.

Linnaeus enumerates 33 species of the aphid, all of them inhabitants of particular plants, from which their trivial names are taken; as *aphis ribis*, *ulmi*, *rose*, &c.: And he adds, that there seem to be a greater variety of plants producing aphides than there are different sorts of this insect. But some late observers have been able to distinguish more than double the above number of species; and it is probable that many more remain still to be added, as many of the same kind of plants are found to support two or three quite different sorts of aphides. Thus the plum-tree has two sorts very distinct from each other; one of a yellowish green, with a round short body; the other of a bluish green, as it were enamelled with white, and the shape more oblong. On the gooseberry-bush and currant the same aphides may be found; but each of these is inhabited by two very different species: one being of a dusky green, with a short plump body; the other of a paler green, the body more taper, and transversely wrinkled. The rose-tree, again, supports not less than three distinct species: the largest is of a deep green, having long legs of a brownish cast, with the joints of a very dark brown, as are also the horns and antennæ; a second sort is of a paler green, has much shorter legs, and a more flat body; the third sort is of a pale red, its body transversely wrinkled, and is most frequently on the sweet-briar.

The extraordinary nature of these insects have for some time past justly excited the wonder and attention of naturalists. They were long ranked among the animals which had been classed with the true androgynes spoken of by Mr Breynius: for having never been caught copulating, it was hastily concluded that they multiplied without copulation. This, however, was but a doubt, or at best a mere surmise: but this surmise was believed and adopted by Mr Reaumur; and tho' he supported it by some observations peculiar to himself, the question remained still undecided, till Mr Bonnet seemed to have cleared it up in the affirmative, by taking and shutting up a young aphid at the instant of its birth, in the most perfect solitude, which yet brought forth in his sight 95 young ones. The same experiment being made on one of the individuals of this family, that had been tried with its chief, the new hermit soon multiplied like its parent; and one of this third generation, in like manner brought up in solitude, proved no less fruitful than the former. Repeated experiments, in this respect, as far as the fifth or sixth generation, all uniformly presenting the observer with *secund virgins*, were communicated to the

Royal Academy of Sciences; when an unforeseen and very strange suspicion, imparted by Mr Trembley to Mr Bonnet, engaged him anew in a series of still more painful experiments than the foregoing. In a letter which that celebrated observer wrote to him from the Hague, the 27th January 1741, he thus expresses himself: "I formed, since the month of November, the design of rearing several generations of solitary pucerons, in order to see if they would all equally bring forth young. In cases so remote from usual circumstances, it is allowed to try all sorts of means; and I argued with myself, Who knows, but that one copulation might serve for several generations?" This "*who knows*," to be sure, was next to avouching nothing; but as it came from Mr Trembley, it was sufficient to persuade Mr Bonnet that he had not gone far enough in his investigation. If the fecundity of aphides was owing to the secret copulation suggested by Mr Trembley; this copulation served at least five or more successive generations. Mr Bonnet therefore reared to the amount of the tenth generation of solitary aphides, and had the patience to keep an account of the days and hours of the births of each generation. In short, it was discovered, That they are really distinguished by sexes: That there are males and females amongst them, whose amours are the least equivocal of any in the world: that the males are produced only in the tenth generation, and are but few in number: that these, soon arriving at their full growth, copulate with the females: that the virtue of this copulation serves for ten generations: that all these generations, except the first (from the fecundated eggs), are produced viviparous; and all the individuals are females, except those of the last generations, among whom, as we have already observed, some males make their appearance, to lay the foundations of a fresh series.—These circumstances have been confirmed by other naturalists. In particular we have a curious and accurate detail of them by Dr Richardson of Rippon, in the Philosophical Transactions, Vol. xi. art. 22. an extract of which we shall here insert, in order to give the reader as full an insight into the nature of these singular insects, as can be done by a mere detail of facts in themselves utterly unaccountable.

"The great variety of species which occur in the insects now under consideration, may make an inquiry into their particular nature seem not a little perplexed; having them, however, skilfully reduced under their proper genus, the difficulty is by this means considerably diminished. All the insects comprehended under any distinct genus, we may reasonably suppose to partake of one general nature; and, by diligently examining any of the particular species, may thence gain some insight into the nature of all the rest. With this view I have chosen, out of the various sorts of aphides, the largest of those found on the rose-tree; not only as its size makes it the more conspicuous, but as there are few others of so long a duration. This sort, appearing early in the spring, continues late in the autumn; while several are limited to a much shorter term, in conformity to the different trees and plants from whence they drew their nourishment.

1. "If at the beginning of February the weather happens to be so warm as to make the buds of the rose-tree swell and appear green; small aphides are frequently to be found upon them, not larger than the young.

Aphis.

Aphis.

young ones in summer when first produced. But there being no old ones to be found at this time of the year, which in summer I had observed to be viviparous, I was formerly not a little perplexed by such appearances, and almost induced to give credit to the old doctrine of equivocal generation. That the same kind of animal should at one time of the year be viviparous, and at another time oviparous, was an opinion I could then by no means entertain. This, however, frequent observation has at last convinced me to be fact; having found those aphides which appear early in the spring, to proceed from small black oval eggs which were deposited on the last year's shoots in autumn: though, when it happens that the insects make too early an appearance, I have observed the greatest part to suffer from the sharp weather that usually succeeds, by which means the rose-trees are some years in a manner freed from them.

"Those which withstand the severity of the weather seldom come to their full growth before the month of April; at which time they usually begin to breed, after twice casting off their exuvæ or outward covering. It appears then that they are all females, which produce each of them a very numerous progeny, and that without having recourse with any male insect. As I observed before, they are viviparous; and what is equally uncommon, the young ones all come into the world backwards. When they first come from the parent they are enveloped by a thin membrane, having in this situation the appearance of an oval egg; which, I apprehend, must have induced Reaumur to suspect that the eggs discovered by Bonnet were nothing more than mere abortions. These egg-like appearances adhere by one extremity to the mother; while the young ones contained in them extend the other; by that means gradually drawing the ruptured membrane over the head and body to the hind feet. During this operation, and for some time after, by means of something glutinous, the fore part of the head adheres to the vent of the parent. Being thus suspended in the air, it soon frees itself from the membrane in which it was confined, and, after its limbs are a little strengthened, is set down on some tender shoot, and then left to provide for itself.

2. "In the spring months, there appear on the rose-trees but two generations of aphides, including those which immediately proceed from the last year's eggs; the warmth of the summer adds so much to their fertility, that no less than five generations succeed one another in the interval. One is produced in May, which casts off its covering; while the months of June and July each supply two more, which cast off their coverings three or four times, according to the different warmth of the season. This frequent change of the outward covering is the more extraordinary, as it is the oftenest repeated when the insects come the soonest to their growth; which I have sometimes observed to happen in ten days, where warmth and plenty of nourishment have mutually conspired. From which considerations I am thoroughly convinced that these various coverings are not connate with the insect; but that they are, like the scarf-skin, successively produced.

"Early in the month of June, some of the third generation which were produced about the middle of May, after casting off their last covering, discover four

erect wings, much longer than their bodies: and the same is observable in all the succeeding generations, which are produced during the summer months; without, however, distinguishing any diversity of sex, as is usual in several other kinds of insects. For some time before the aphides come to their full growth, it is easy to discover which of them will have wings, by a remarkable fullness of the breast, which, in the others, is hardly to be distinguished from the body. When the last covering is rejected, the wings, which were before folded up in a very narrow compass, gradually extend themselves in a most surprising manner, till their dimensions are at last very considerable. But these winged ones have the peculiarity, that the number of them does not seem so much to depend on their original structure, as on the quantity or quality of the nourishment with which they are supplied: it being frequently observed, that those on a succulent shoot have few or none with wings among them, while others of the same generation, on a less tender branch, are most of them winged; as if only the first rudiments of wings were composed in the former, while nature thought proper to expand them in the latter, that they might be more at liberty to supply their wants.

"The increase of these insects in the summer-time is so very great, that, by wounding and exhausting the tender shoots, they would frequently suppress all vegetation, had they not many enemies which restrain them. To enumerate the variety of other insects that in their worm and fly state are constantly destroying them, would exceed the bounds of the present design: there is one, however, so singular in the manner of executing its purpose, that I cannot pass by it without some further notice. This is a very small black ichneumon fly, with a slender body and very long antennæ, which darts its pointed tail into the bodies of the aphides, at the same time depositing an egg in each. This egg produces a worm, which feeds upon the containing insect till it attains its full growth; when it is usually changed to that kind of fly from whence it came. In this, however, it is sometimes prevented by another sort of small black fly, which wounds this worm through its pearl-like habitation; and by laying one of its eggs therein, instead of the former fly, produces its own likeness. I must, however, further observe, notwithstanding these insects have many enemies, they are not without friends; if we may consider those as such who were very officious in their attendance, for the good things they expect to reap thereby. The ant and the bee are both of this kind, collecting the honey in which the aphides abound; but with this difference, that the ants are constant visitors, the bee only when flowers are scarce. To which let me also add, that the ants will suck in the delicious nectar while the aphides are in the act of discharging it from the anus; but the bees only collect it from the leaves on which this honey-dew has fallen.

3. "In the autumn I find three more generations of aphides to be produced; two of which make their appearance in the month of August, and the third usually appear before the middle of September. As the two first differ in no respect from those which we meet with in summer, it would be wasting time to dwell any longer upon them; but the third, differing greatly from all the rest, demands our giving it a more

Aphis.

Aphis.

serious attention. Though all the aphides which have hitherto appeared were females, in this tenth generation are found several male insects; not that they are by any means so numerous as the females, being only produced by a small number of the former generation. To which I must further add, that I have observed those which produce males, previously to have produced a number of females; which in all respects resembling those already described, I shall decline taking into any further consideration.

"The females have at first altogether the same appearance with those of the former generations; but in a few days their colour changes from a green to a yellow, which is gradually converted into an orange colour before they come to their full growth. They differ likewise in another respect, at least from those which occur in the summer, that all those yellow females are without wings. The male insects are, however, still more remarkable, their outward appearance readily distinguishing them from the females of this and of all other generations. When first produced, they are not of a green colour like the rest, but of a reddish brown; and have afterwards, when they begin to thicken about the breast, a dark line along the middle of the back. These male insects come to their full growth in about three weeks time, and then cast off their last covering; the whole insect being, after this operation, of a bright yellow colour, the wings only excepted. But after this they soon change to a darker yellow; and in a few hours to a very dark brown; if we except the body, which is something lighter coloured, and has a reddish cast. They are all of the winged sort: and the wings, which are white at first, soon become transparent, and at length appear like very fine black gauze.

"The males no sooner come to maturity than they copulate with the females; in which act they are readily discovered, as they remain in conjunction for a considerable time, and are not easily disturbed. The commerce between them continues the whole month of October, and may be observed at all times of the day, though I have found it most frequent about noon; especially when the weather is moderately warm, and the sun overcast. The females, in a day or two after their intercourse with the males, I have observed to lay their eggs; which they usually do near the buds, when they are left to their own choice. Where there are a number crowded together, they of course interfere with each other; in which case they will frequently deposite their eggs on other parts of the branches, or even on the spines with which they are beset."

These insects are found in great numbers not only on the stems and leaves, but even upon roots of many trees and plants. Those trees that are most loaded with the insects, as already observed, suffer greatly from them. The plant-lice thrust their sharp-pointed rostrum into the substance of the leaf to draw out their sustenance, which wraps the stems and leaves, and occasions in the latter cavities underneath, and swellings above; nay, even in some, a kind of hollow gall filled with insects, as is often seen on elm-leaves.

It appears astonishing that the slight puncture of so small an animal should so greatly disfigure a plant: but it must be remembered, that plant-lice always live in numerous associations, which increase visibly by the

prodigious fruitfulness of those insects; so that although each puncture be slight, yet the number of them is so great, so reiterated, that it is no longer a wonder the leaves should be disfigured. Lovers of gardening and plants are extremely anxious to free and cleanse their trees from this vermin; but their care often proves unavailing, the insect is so fruitful that it soon produces a fresh colony. The best and surest method of extirpating it is to put on the trees infested with them some larvæ of the plant-louse lion, or aphidivorous flies*; for those voracious larvæ destroy every day a great number of the insects, and that with so much the more facility, as the latter remain quiet and motionless in the neighbourhood of these dangerous enemies, who range over heaps of plant-lice, which they gradually waste and diminish.

APHLASTUM, in the ancient navigation, a wooden ornament, shaped like a plume of feathers, fastened on the goose's or swan's neck used by the ancient Greeks in the heads of their ships. The aphlastum had much the same office and effect in a ship that the crest had on the helmet. It seems also to have had this further use, viz. by the waving of a party-coloured ribband fastened to it, to indicate from what quarter the wind blew.

APHONIA, among physicians, signifies a suppression or total loss of voice. It is never a primary disease; but a consequence of many different disorders. The cure is to be effected by removing the disorder from whence the aphonia proceeds.

APHORISM, a maxim or principle of a science; or a sentence which comprehends a great deal in a few words. The word comes from *απορίζω*, *I separate*; q. d. a choice or select sentence.—The term is chiefly used in medicine and law. We say the aphorisms of Hippocrates, of Sanctorius, of Boerhaave, &c. aphorisms of the civil law, &c.

APHRACTI, in the ancient military art, denotes open vessels, without decks or hatches, furnished only at head and stern with cross planks, whereon the men stood to fight.

APHRODISIA, in antiquity, festivals kept in honour of Venus, the most remarkable of which was that celebrated by the Cyprians. At this solemnity several mysterious rites were practised: all who were initiated to them offered a piece of money to Venus as an harlot, and received as a token of the goddess's favour a measure of salt, and a *φαλλος*; the former, because salt is a concretion of sea-water, to which Venus was thought to owe her birth; the latter, because she was the goddess of wantonness.

APHRODISIACS, among physicians, medicines which increase the quantity of semen, and create an inclination to venery.

APHRODITA, in zoology, an insect of the order of vermes mollusca. The body of the aphrodita is oval, with many small tentacula or protuberances on each side, which serve as so many feet: The mouth is cylindrical at one end of the body, and capable of being retracted, with two bristly tentacula. There are four species of this insect; viz. 1. The aculeata, by some called the *sea-mouse*, with 32 tentacula or feet, an inhabitant of the European seas, and often found in the belly of the cod-fish. It feeds upon shell-fish. See plate XV. fig 4. 2. The scabra, of an oblong shape, scabrous

Aphlastum

|| Aphrodita.

* See Coccinella, Ichneumon, Hemerobius, &c.

See Plate I.
(vol. i.)

Aphrodite scabrous on the back, with 20 tentacula. It inhabits the Belgic sea. It is sometimes taken off Brighthelmstone, an inch long. 3. The *squamata*, with 24 feet, and scaly on the back. The mouth is wrapt up in an aperture, and the tail is terminated by a few very short bristles. It inhabits the European ocean. 4. The *imbricata*, is very like the former, only its scales are more glabrous. It inhabits the northern ocean.

APHRODITE, in mythology, a name of Venus, derived from *αφρος*, *froth*; because, according to the poets, Venus is supposed to have been produced from the froth or foam of the sea.

APHRONITRE, in natural history, a name given by the ancients to a particular kind of natrum.

APHTHÆ, in medicine, small, round, and superficial ulcers arising in the mouth. See *MEDICINE-Index*.

APHTHARTODOCETÆ, a sect, sworn enemies of the council of Chalcedon. The word is derived from *αφθαρτος*, *incorruptible*, and *δοκω*, *I imagine*; and was given them, because they imagined the body of Jesus Christ was incorruptible and impassible, and not capable of death. They arose among the Eutychians, and made their first appearance in the year 535.

APHYLLANTHES, LEAFLESS FLOWER, OR BLUE MONTPELLIER PINK: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under the 5th order, *Tetrapetalidæ*. In character it differs not from the *Juncus* or rush, but in having a calyx of six petals, whereas the *juncus* has no calyx. There is only one species, the *Monspeliensis*, a native of France. The root consists of a number of slender, hard, woody, long, and contorted fibres: the radical leaves are very numerous, two inches long, extremely narrow, and wither very quickly. The stalk is round, smooth, without a joint or knot, naked, and tolerably firm; at its top stands a single and very beautiful blue flower, arising from a kind of compound imbricated cup.

APIARY, a place where bees are kept. See the article *BEE*.

APIASTER, in ornithology, the trivial name of a species of the merops. See *MEROPS*.

APICES, in botany, the same with *ANTHERÆ*.

APICIUS. There were at Rome three of that name, famous for their gluttony: the second is the most celebrated of the three. He lived under Tiberius, spent immense sums on his belly, and invented divers sorts of cakes which bore his name. He kept as it were a school of gluttony at Rome. After having spent two millions and a half in entertainments, finding himself very much in debt, he examined into the state of his affairs; and seeing that he had but 250,000 *livres* remaining, he poisoned himself, out of apprehension of starving with such a sum. He had prostituted himself when very young to *Sejanus*.

APINA, or *Apina*, a town of Apulia, built by Diomedes, as was also *Trica* (Pliny). *Apina* and *Trica* is a proverbial saying for things trifling and of no value (Martial); and *Apinarii* was the appellation for triflers or buffoons, (Trebellius Pollio).

APION, a famous grammarian, born in Egypt, was a professor at Rome in the reign of Tiberius. He had all the arrogance of a mere pedant, and amused himself with difficult and insignificant inquiries. One

of his principal works was his *Antiquities of Egypt*.

APIS, in mythology, a divinity worshipped by the ancient Egyptians at Memphis. It was an ox, having certain exterior marks; in which animal the soul of the great Osiris was supposed to subsist. This animal had the preference to all others, as being the symbol of agriculture, the improvement of which that prince had so much at heart.

According to several learned writers on the Egyptian religion, Apis was only a symbolical deity. "Amongst the animals consecrated to ancient rites (says Ammianus Marcellinus), Mnevis and Apis are the most celebrated: the first is an emblem of the sun, the second of the moon." Prophecy tells us, that Apis bore the characteristic signs of the two stars; and Macrobius, who confirms this opinion, adds, that he was equally consecrated to them both.

This bull, become the object of public adoration, it may be supposed, could not be born like other animals; accordingly the priests published that his origin was celestial. "An Apis is seldom born, says Pomponius Mela. He is not produced by the ordinary laws of generation. The Egyptians say he owes his birth to celestial fire." Plutarch explains this passage: "The priests pretend that the moon diffuses a generative influence, and as soon as a cow who takes the bull is struck by it, she conceives an Apis. Accordingly we discover in him the signs of that star."

Such were the fables industriously spread by those who presided over the divine institutions. The vulgar, to whom this emblematical deity presaged abundance, received them eagerly, and implicitly believed them. Pliny has described the characters which distinguished this sacred bull: "A white spot, resembling a crescent, on the right side, and a lump under the tongue, were the distinguishing marks of Apis." When a cow, therefore, which was thought to be struck with the rays of the moon, produced a calf, the sacred guides went to examine it, and if they found it conformable to this description, they announced to the people the birth of Apis, and fecundity.

"Immediately (says *Jelian*) they built a temple to the new god, facing the rising sun, according to the precepts of Mercury, where they nourished him with milk for four months. This term expired, the priests repaired in pomp to his habitation, and saluted him by the name of Apis. They then placed him in a vessel magnificently decorated, covered with rich tapestry, and resplendent with gold, and conducted him to Nilotis, singing hymns, and burning perfumes. There they kept him for forty days. During this space of time, women alone had permission to see him, and saluted him in a particular manner. After the inauguration of the god, in this city, he was conveyed to Memphis with the same retinue, followed by an innumerable quantity of boats, sumptuously decked out. There they completed the ceremonies of his inauguration, and he became sacred to all the world. Apis was superbly lodged, and the place where he lay was mystically called *the bed*. Strabo having visited his palace, thus describes it: "The edifice where Apis is kept, is situated near the temple of Vulcan. He is fed in a sacred apartment, before which is a large court. The house in which they kept the cow that produced him,

Apis.

him, occupies one of its sides. Sometimes, to satisfy the curiosity of strangers, they make him go out into this court. One may see him at all times through a window; but the priests produce him also to public view." Once a year (says Solinus) they present a heifer to him, and the same day they kill her.

A bull, born in so marvellous a manner, must be possessed of supernatural knowledge. Accordingly the priests published, that he predicted future events by gestures, by motions, and other ways, which they construed according to their fancy. "Apus (says Pliny) has two temples called *Beds*, which serve as an augury for the people. When they come to consult him, if he enters into a particular one, it is a favourable presage, and fatal if he passes into the other. He gives answers to individuals by taking food from their hands. He refused that offered him by Germanicus, who died soon after." It would be unjust to conclude, that this respectable writer gave credit to such auguries. He relates the opinion of the Egyptians, and contents himself with citing facts without offering his judgment.

Such was the installation of Apis. His anniversary was always celebrated for seven days. The people assembled to offer sacrifices to him, and what is extraordinary, oxen were immolated on the occasion. This solemnity did not pass without prodigies. Ammianus Marcellinus, who has collected the testimonies of the ancients, relates them in these words: "During the seven days in which the priests of Memphis celebrate the birth of Apis, the crocodiles forget their natural ferocity, become gentle, and do no harm to any body."

This bull, however, so honoured, must not exceed a mysterious term fixed for his life. "Apis (says Pliny) cannot live beyond a certain number of years. When he has attained that period they drown him in the fountain of the priests; for it is not permitted, adds Ammianus Marcellinus, to let him prolong his life beyond the period prescribed for him by the sacred books." When this event happened, he was embalmed, and privately let down into the subterraneous places destined for that purpose. In this circumstance, the priests announced that Apis had disappeared; but when he died a natural death, before this period arrived, they proclaimed his death, and solemnly conveyed his body to the temple of Serapis.

"At Memphis was an ancient temple of Serapis, which strangers were forbidden to approach, and where the priests themselves only entered when Apis was interred. It was then (say Plutarch) that they opened the gates called *Lethes* and *Cocytus* (of oblivion and lamentation), which made a harsh and piercing sound."

Ammianus Marcellinus, and Solinus, paint with great energy the general despair of the Egyptians, who with cries and lamentations demanded another Apis from heaven.

According to Plutarch, the term prescribed for the life of Apis was 25 years; which number marked a period of the sun and of the moon, and the bull was consecrated to these two bodies. Syncellus, in his Chronography, when he comes down to the 32d Pharaoh, called *Aseth*, says, "Before Aseth, the solar year consisted of 360 days. This prince added five to com-

plete its course. In his reign a calf was placed amongst the gods, and named *Apis*." And in the Bibliotheca of Fabricius we have the following passage: "It was customary to inaugurate the kings of Egypt at Memphis, in the temple of Apis. They were here first initiated in the mysteries, and were religiously invested; after which, they were permitted to bear the yoke of God, through a town to a place called the *Sanctuary*, the entrance of which was prohibited to the profane. There they were obliged to swear that they would neither insert months nor days in the year, and that it should remain composed of 365 days, as had been established by the ancients."—From these facts Mr Savary, in his letters on Egypt, infers, that Apis was the tutelary divinity of the new form given to the solar year, and of the cycle of 25 years, discovered at the same time. This deity, besides, had a marked relation to the swelling of the Nile, as is testified by a great number of historians. The new moon which followed the summer solstice, was the æra of this phenomenon, on which the eyes of every body were fixed: And Pliny speaks as follows on this subject: "Apis had on his right side a white mark, representing the crescent: This mark (continues Ælian) indicated the commencement of the inundation." If Apis possessed the characteristic signs which proved his divine origin, he promised fertility and abundance of the fruits of the earth. It seems demonstrated, therefore, Mr Savary adds, that this sacred bull, the guardian of the solar year of 365 days, was also regarded as the genius who presided over the overflowing of the river. The priests, by fixing the course of his life to 25 years, and by making the installation of a new Apis concur with the renewal of the period above mentioned, had probably perceived, as the result of long meteorological observations, that this revolution always brought about abundant seasons. Nothing was better calculated to procure a favourable reception of this emblematical deity from the people, since his birth was a presage to them of a happy inundation, and of all the treasures of teeming nature.

The solemnity of this inauguration was called *Apparition*. That which was renewed every year towards the 12th or 13th of the month *Payn*, which corresponds with the 17th or 18th of June, was called the *birth of Apis*. It was a time of rejoicing, which Ælian describes in the following manner: "What festivals! what sacrifices take place in Egypt at the commencement of the inundation! It is then that all the people celebrate the birth of Apis. It would be tedious to describe the dances, the rejoicings, the shews, the banquets, to which the Egyptians abandon themselves on this occasion, and impossible to express the intoxication of joy which breaks forth in all the towns of the kingdom."

These observations Mr Savary thinks further confirmed by the name of this respectable bull; *Api*, in the Egyptian tongue, signifying number, measure. This epithet perfectly characterizes an animal established as the guardian of the solar year, the type of the cycle of 25 years, and the presage of a favourable inundation.

Monsieur Heut, Bishop of Avranche, has endeavoured to prove that Apis was a symbolical image of the patriarch Joseph, and has supported his opinion with

Apis.

Apis.

with all his erudition. Dr Bryant apprehends that the name of *Apis* was an Egyptian term for a father; that it referred to the Patriarch Noah; and that the crescent which was usually marked on the side of the animal, was a representation of the ark.

APIS, or BEE, in zoology, a genus of insects belonging to the order of insecta hymenoptera. The mouth is furnished with two jaws, and a proboscis infolded in a double sheath; the wings are four in number, the two foremost covering those behind when at rest: In the anus or tail of the females and working bees there is a hidden sting.

These insects are distinguished into several species, each of which has its peculiar genius, talent, manners, and disposition. Variety prevails in the order of their architecture, and in the nature of their materials. Some live in society, and share the toils; such are the common bee and the drone. Others dwell and work in solitude, building the cradles of their families; as the leaf-cutter bee does with the rose-tree leaf; the upholsterer with the gaudy tapestry of the corn-rose; the mason-bee with a platter, the wood-piercer with sawdust. All are employed in their little hermitage, with the care of providing for the wants of their posterity. —The species enumerated by Linnæus are no fewer than 55; of which the following are the most remarkable:—

1. The floriformis, or black bee with a cylindrical incurvated belly, having two toothed-like protuberances at the anus, and a kind of prickles on the hind-legs. This bee sleeps in flowers.
2. The dentata, or shining green bee, with black wings, and a kind of teeth on the hind thighs. The tongue of this bee is almost as long as its body.
3. The variegata; the breast and belly are variegated with white and black spots; the legs are of an iron colour. It is a native of Europe. This species sleeps in the geranium phæim, or spotted crane's-bill.
4. The rostrata is distinguished by the upper-lip being inflected and of a conical shape, and by the belly being invested with bluish belts. They build their nests in high sandy grounds, and there is but one young in each nest.
5. The ferruginea, or smooth black bee, with the feelers, mouth, belly, and feet of an iron colour. This is a small bee, and supposed to be of an intermediate kind between the bee and wasp. It is a native of Europe.
6. The cariosa is a yellowish hairy bee; and the feet and front are of a bright yellow colour. It builds in the rotten trees of Europe.
7. The brasiliæ, or pale-red hairy bee, with the basis of the thighs black. This is a very large bee, every where covered with a testaceous skin. It is a native of America.
8. The lapidaria, or red hairy bee, with a yellow anus, builds in holes of rocks.
9. The terrestris is black and hairy, with a white belt round the breast, and a white anus: it builds its nest very deep in the earth.
10. The violacea is a red bee, and very hairy, with bluish wings. It is a native of Europe. The violacea is said to perforate trees, and hollow them out in a longitudinal direction; they begin to build their cells at the bottom of these holes, and deposit an egg in each cell, which is composed of the farina of plants and honey or a kind of gluten.
11. The muscorum, or yellow hairy bee with a white belly, builds in mossy grounds. The skill displayed by these builders is admirable. In order to enjoy the

pleasure of seeing their operations, let a nest be taken to pieces, and the moss conveyed to a distance. The bees will be seen to form themselves into a chain, from their nest to the place where the moss has been laid. The foremost lays hold of some with her teeth, clears it bit by bit with her feet (which circumstance has also gotten them the name of carding-bees), then, by the help of her feet, she drives the unravelled moss under her belly; the second, in like manner, pushes it on to the third. Thus there is formed an uninterrupted chain of moss, which is wrought and interwoven with the greatest dexterity by those that abide by the nest; and to the end, their nest may not be the sport of the winds, and may shelter them from rain, they throw an arch over it, which they compose with a kind of wax, tenacious, though thin in substance, which is neither the unwrought bees wax nor the real wax. Dissolved in oil of turpentine, it may be used in taking off impressions. 12. The centuncularis, leaf-cutter, or black bee, having its belly covered with yellow down. The nests of this species are made of leaves curiously plaited in the form of a matt or quilt. There are several varieties of the leaf-cutting bees, all equally industrious. They dig into the ground, and build their nests, of which some have the form and size of thimbles inserted one within another, others the shape and size of goose-quills. These nests are composed of pieces of leaves. Each sort of bees cut into its own materials; some the rose-tree leaf, others the horse chesnut. A careful observer may discover rose-tree leaves cut as it were with a pinking iron; and there he may procure himself the pleasure of seeing with what dexterity a bee, destitute of any mathematical instrument, cuts out a circular piece, fit to be either the bottom or the lid of one of those nests; others it cuts out into ovals and semi-ovals, which form the sides of the nests, into each of which it deposits one egg with ready prepared victuals. 13. The mellifica, or domestic honey-bee. But the particulars concerning this valuable species are so numerous and interesting as to require a separate article for their detail; which the reader will therefore find at due length under the English or popular name BEE.

In the Philosophical Transactions, N^o 172*, we have * Vol. I. 68. an account of a species of honey-bee found in some parts of America, very different in form and manners from the common bee of Europe. Their combs are composed of a series of small bottles or bladders of wax, of a dusky brown or blackish colour; and each of these is much of the size and shape of a Spanish olive. They hang together in clusters, almost like a bunch of grapes, and are so contrived, that each of them has its aperture, while the bees are at work upon it; but as soon as it is filled with honey, this aperture is closed, and the bees leave it, and go to work upon another vessel. Their lodgings are usually taken up in the hollow of an old tree, or in some cavity of a rock by the sea-side. They are sagacious in choosing the most secure retreats, because their honey is so delicious a bait, that they are hunted after by many animals; and they have no power of defending themselves, having no stings as our bees have. The combs are brittle; and the honey is clear and liquid like rock-water. It is used by the natives rather as a drink with their food than as honey. They use it also in medicine as a purge, drinking half a pint of it in the morning fasting.

Apis.

Plate LVI.

Apis,
Apium.

The Abbé Clavigero, in his history of Mexico, mentions a species similar in every respect to ours, but without the sting. This is the bee of Yucatan and Chiapa, which makes the fine clear honey of *Eslabentùn*, of an aromatic flavour, superior to that of all the other kinds of honey with which we are acquainted. The honey is taken from them six times a-year, that is, once in every other month; but the best is that which is got in November, being made from a fragrant white flower like jessamine, which blows in September, called in that country *Eslabentùn*, from which the honey has derived its name. This honey is said to be in high estimation with the Europeans who touch at the ports of Yucatan. According to our author, the French of Guarico buy it sometimes for the purpose of sending it as a present to the king. Another species described by the same author, resembles in its form the winged ants, but is smaller than the common bee and without a sting. This insect, which is peculiar to warm and temperate climates, forms nests in size and shape resembling sugar-loaves, and even sometimes greatly exceeding these in size, which are suspended from rocks, or from trees, and particularly from the oak. The populousness of these hives are much greater than those of the common bee. The nymphs of this bee, which are eatable, are white and round, like a pearl. The honey is of a greyish colour, but of a fine flavour.

APIUM, PARSLEY: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellata*. The fruit is of an oval shape, and streaked; the involucre consists of one leaf; and the petals are inflected. There are only two species of apium; the petroselinum, or common parsley, a native of Sardinia; and the graveolens or smallage, a native of Britain: the culture of both which are well known.

Medicinal Uses, &c. The roots and seeds of the petroselinum are used in medicine. The root of parsley is one of the five aperient roots, and in this intention is sometimes made an ingredient in apozems and diet-drinks: if liberally used, it is apt to occasion flatulencies; and thus, by distending the viscera, produces a contrary effect to that intended by it: the taste of this root is somewhat sweetish, with a light degree of warmth and aromatic flavour. The seeds are an ingredient in the electuary of bay-berries.—The roots of smallage are also in the number of aperient roots, and have been sometimes prescribed as an ingredient in aperient apozems and diet-drinks, but are at present disregarded. The seeds of the plant are moderately aromatic, and were formerly used as carminatives; in which intention they are, doubtless, capable of doing service, though the other warm seeds, which the shops are furnished with, render these unnecessary; and accordingly the Edinburgh college, which retains the roots, has expunged the seeds.

Besides its medicinal virtues above mentioned, the common parsley is reckoned an effectual cure for the rot in sheep, provided they are fed with it twice a-week for two or three hours each time: but hares and rabbits are so fond of this herb, that they will come from a great distance to feed upon it; and in the countries where these animals abound, they will de-

stroy it if not very securely fenced against them; so that whoever has a mind to have plenty of hares in their fields, may draw them from all parts of the country by cultivating parsley.

APIVORUS, in ornithology, a synonyme of a species of falco. See **FALCO**.

APLUDA: A genus of the monœcia order, belonging to the polygamia class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx is a bivalved gluma; the floscules of the female are sessile, and the male floscules are furnished with pedunculi; the female has no calyx; the corolla has a double valve; there is but one stylus, and one covered seed. The male has three stamina. There are three species of apluda, viz. the mutica, aristata, and zengites, all natives of the Indies.

APOBATANA, the metropolis of Media, and where the kings kept their treasure (Isidorus Characenus); supposed to be the same with *Ecbatana*.

APOBATERION, in antiquity, a valedictory speech or poem made by a person on departing out of his own country, and addressed to his friends or relations.

APOBATHRA, a place near Sestos (Strabo); the landing place where Xerxes's ships were frozen and stuck in the ice (Eustathius).

APOCALYPSE, REVELATION, the name of one of the sacred books of the New Testament, containing revelations concerning several important doctrines of Christianity. The word is Greek, and derived from ἀποκαλύπτω, to reveal, or discover.

This book, according to Irenæus, was written about the year 96 of Christ, in the island of Patmos, whither St John had been banished by the Emperor Domitian. But Sir Isaac Newton places the writing of it earlier, viz. in the time of Nero. Some attribute this book to the arch-heretic Cerinthus: but the ancients unanimously ascribed it to John, the son of Zebedee, and brother of James; whom the Greek fathers call the *Divine*, by way of eminence, to distinguish him from the other evangelists. This book has not, at all times, been esteemed canonical. There were many churches in Greece, as St Jerome informs us, which did not receive it; neither is it in the catalogue of canonical books prepared by the council of Laodicea, nor in that of St Cyril of Jerusalem: but Justin, Irenæus, Origen, Cyprian, Clements of Alexandria, Tertullian, and all the fathers of the fourth, fifth, and the following centuries, quote the Revelations a book then acknowledged to be canonical. The Alogians, Marcionites, Cerdonians, and Luther himself rejected this book: but the Protestants have forsaken Luther in this particular; and Beza has strongly maintained against his objections, that the Apocalypse is authentic and canonical.

The Apocalypse consists of twenty-two chapters. The three first are an instruction to the bishops of the seven churches of Asia Minor. The fifteen following chapters contain the persecutions which the church was to suffer from the Jews, heretics, and Roman emperors. Next St John prophesies of the vengeance of God, which he will exercise against those persecutors, against the Roman empire, and the city of Rome; which, as the Protestants suppose, he describes under the name of Babylon the great whore, seated upon seven

Apocalypse seven hills. In the last place, the 19th, 20th, 21st, and 22d chapters, describe the triumph of the church over its enemies, the marriage of the Lamb, and the happiness of the church triumphant.

“It is a part of this prophecy (says Sir Isaac Newton), that it should not be understood before the last age of the world; and therefore it makes for the credit of the prophecy, that it is not yet understood. The folly of interpreters has been to foretel times and things by this prophecy, as if God designed to make them prophets. By this rashness they have not only exposed themselves, but brought the prophecy also into contempt. The design of God was much otherwise: He gave this and the prophecies of the Old Testament, not to gratify mens curiosities, by enabling them to foreknow things: but that, after they were fulfilled, they might be interpreted by the events; and his own providence, not the interpreters, be then manifested thereby to the world. And there is already so much of the prophecy fulfilled, that as many as will take pains in this study, may see sufficient instances of God’s providence.

There have been several other works published under the title of *Apocalypses*. Sozomen mentions a book used in the churches of Palestine, called the *Apocalypse*, or *Revelation of St Peter*. He also mentions an *Apocalypse* of St Paul: which the Cophitæ retain to this day. Eusebius also speaks of both these *Apocalypses*. St Epiphanius mentions an *Apocalypse* of Adam; Nicephorus, an *Apocalypse* of Esdras: Gratian and Cedrenus, an *Apocalypse* of Moses, another of St Thomas, and another of St Stephen; St Jerom, an *Apocalypse* of Elias. Porphyry, in his life of Plotin, makes mention of the *Apocalypse* or *Revelations* of Zoroaster, Zostrian, Nichothæus, Allogenes, &c.

APOCOPE, among grammarians, a figure which cuts off a letter or syllable from the end of a word; as *ingeni* for *ingenii*.

APOCRISARIUS, in ecclesiastical antiquity, a sort of resident in an imperial city, in the name of a foreign church or bishop, whose office was to negotiate, as proctor at the emperor’s court, in all ecclesiastical causes in which his principals might be concerned. The institution of the office seems to have been in the time of Constantine, or not long after, when, the emperors being become Christians, foreign churches had more occasions to promote their suits at court than formerly. However, we find it established by law in the time of Justinian. In imitation of this officer, almost every monastery had its *Apocrisarius*, or resident, in the imperial city.

The title and quality of *Apocrisary* became at length appropriated to the Pope’s agent, or *Nuncio*, as he is now called; who resided at Constantinople, to receive the Pope’s dispatches, and the emperor’s answers. The word is formed from *Αποκρισις*, to answer.

APOCRUSTICS, in medicine, the same with repellents. See **REPELLENTS**.

APOCRYPHA, or **APOCRYPHAL BOOKS**, such books as are not admitted into the canon of scripture, being either not acknowledged as divine, or considered as spurious. The word is Greek; and derived from *απο*, and *κρυπτω* to hide or conceal.

When the Jews published their sacred books, they

gave the appellations of *canonical* and *divine* only to such as they then made public: such as were still retained in their archives they called *apocryphal*, for no other reason but because they were not public; so that they might be really sacred and divine, though not promulged as such.

Thus, in respect of the Bible, all books were called *apocryphal* which were not inserted in the Jewish canon of scripture. Vossius observes, that, with regard to the sacred books, none are to be accounted apocryphal, except such as had neither been admitted into the synagogue nor the church, so as to be added to the canon, and read in public.

The Protestants do not only reckon those books to be apocryphal which are esteemed such in the church of Rome, as the prayer of Manasseh king of Judath, the third and fourth books of Esdras, St Barnabas’s epistle, the book of Hermos, the addition at the end of Job, and the 151st psalm; but also Tobit, Judith, Ester, the book of Wisdom, Jesus the son of Sirah, Baruch the prophet, the Song of the Three Children, the history of Susannah, the history of Bell and the Dragon, and the first and second books of Maccabees.

It is now pretended that these books were not received by the Jews, or so much as known to them. None of the writers of the New Testament cite or mention them: neither Philo nor Josephus speak of them. The Christian church was for some ages an utter stranger to these books. Origen, Athanasius, Hilary, Cyril of Jerusalem, and all the orthodox writers, who have given catalogues of the canonical books of scripture; unanimously concur in rejecting these out of the canon. And for the New Testament, they are divided in their opinions, whether the epistle to the Hebrews, the epistle of St James, and the second epistle of St Peter, the second and third epistles of St John, the epistle of St Jude, and the Revelations, are to be acknowledged as canonical or not.

The Protestants acknowledge such books of scripture only to be canonical as were so esteemed to be in the first ages of the church; such as are cited by the earliest writers among the Christians as of divine authority, and after the most diligent enquiry were received and so judged to be by the council of Laodicea. The several epistles abovementioned, and the book of Revelations, whatever the sentiments of some particular persons are or may have been of them, are allowed by all the reformed churches to be parts of the canon of the New Testament.

The apocryphal books, however, according to the sixth article of the church of England, are to be read for example of life and instruction of manners; but it doth not apply them to establish any doctrine.

APOCYNUM, (*Αποκύνιον*, of *απο* and *κυνω* a dog, because the ancients believed this plant would kill dogs), **DÖGSBANE**: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 30th order, *Contorta*. The essential characters are: The corolla is bell-shaped; and the filaments are five, alternate with the stamina.

Species. Of this genus botanical writers enumerate 11 species; of which the following are the most remarkable: 1. The venetum, with an upright herbaceous stalk, grows on a small island in the sea near Venice, but is supposed to have been originally brought from

Apocynum. from some other country. There are two varieties of this; one with a purple, and the other with a white flower. The roots creep very much, and by them only it is propagated; for it seldom produces any seeds either in the gardens where it is cultivated, or in those places where it grows naturally. Mr Miller tells us, that he had been assured by a very curious botanist, who resided many years at Venice, and constantly went to the spot several times in the season to procure the seeds, had any been produced, that he never could find any pods formed on the plants. The stalks rise about two feet high, and are garnished with smooth oval leaves placed opposite; the flowers grow at the top of the stalks, in small umbels, and make a very pretty appearance. The flowers appear in July and August. 2. The *speciosissimum*, with large flowers, is a native of Jamaica in the savannahs, whence it has the name of *Savannah flower*, by which it is generally known in that island. This sort rises three or four feet high, having woody stalks which send out a few lateral branches, garnished with smooth oval leaves placed by pairs opposite, of a shining green colour on their upper sides, but pale and veined underneath. The flowers are produced from the sides of the branches, upon long foot-stalks: there are commonly four or five buds at the end of each; but there is seldom more than one of them which comes to the flower. The flower is very large, having a long tube which spreads open wide at the top, of a bright yellow, and makes a fine appearance, especially in those places where the plants grow naturally, being most part of the year in flower. 3. *Cordatum* with a climbing stalk. 4. The *villosum*, with hairy flowers and a climbing stalk. These were discovered at La Vera Cruz in New Spain, by Dr William Houston, who sent their seeds to England. They are both climbers, and mount to the tops of the tallest trees. In England they have climbed over plants in the stoves, and risen to upwards of 20 feet high. The third sort has produced flowers several times: but the fourth never showed an appearance of any.

Culture. The first sort is hardy enough to live in England in the open air, provided it is planted in a warm situation and dry soil. It is propagated, as we have already observed, by its creeping roots; the best time for removing and planting which is in the spring, just before they begin to push out new stalks. The other sorts are propagated by seeds, but are so tender as to require being kept constantly in a stove.

Properties. All the species of this plant abound with a milky juice, which flows out from any part of their stalks and leaves when they are broken: this is generally supposed to be hurtful if taken inwardly, but doth not blister the skin when applied to it as the juice of spurge and other acid plants. The pods of all the sorts are filled with seeds, which are for the most part compressed and lie over one another *imbricatim*, like tiles of a house; these have each a long plume of a cottony down fastened to their crowns, by which when the pods are ripe and open, the seeds are wafted by the wind to a considerable distance, so that the plants become very troublesome weeds. This down is in great esteem in France, for stuffing of easy chairs, making quilts, &c. for it is exceedingly light and elastic. It is called by the French *delawad*; and might probably become a vendible commodity in England, were peo-

ple attentive to the collecting of it in Jamaica where the plants are found in plenty.

APODECTÆ, in antiquity, a denomination given to ten general receivers appointed by the Athenians to receive the public revenues, taxes, debts, and the like. The apodectæ had also a power to decide controversies arising in relation to money and taxes, all but those of the most difficult nature and highest concern, which were reserved to the courts of judicature.

APODECTÆI, in the Athenian government, officers appointed to see that the measures of corn were just.

APODES, in a general sense, denotes things without feet. Zoologists apply the name to a fabulous sort of birds, said to be found in some of the islands of the New World, which, being entirely without feet, support themselves on the branches of trees by their crooked bills.

APODES, in the Linnæan system, the name of the first order of fishes, or those which have no belly-fins. See **ZOOLOGY**.

APODICTICAL, among philosophers, a term importing a demonstrative proof, or systematical method of teaching.

APODOSIS, in rhetoric, makes the third part of a complete exordium, being properly the application, or restriction of the *protasis*. The apodosis is the same with what is otherwise called *axiosis*; and stands opposed to *protasis*: e. gr. *protasis*, all branches of history are necessary for a student; *catheue*, so that, without these, he can never make any considerable figure; *apodosis*, but literally history is of a more especial use, which recommends it, &c.

APODYTERIUM, in the ancient baths, the apartments where persons dressed and undressed.

APOGEE, in **ASTRONOMY**, that point in the orbit of a planet which is at the greatest distance from the earth. The apogee of the sun is that part of the earth's orbit which is at the greatest distance from the sun; and consequently the sun's apogee, and the earth's aphelion, are one and the same point.

APOLIDES, in antiquity, those condemned for life to the public works, or exiled into some island, and thus divested of the privileges of Roman citizens.

APOLLINARIAN GAMES, in Roman antiquity, were instituted in the year of Rome 542. The occasion was a kind of oracle delivered by the prophet Marcus after the fatal battle at Cannæ, declaring, that to expel the enemy, and cure the people of an infectious disease which then prevailed, sacred games were to be annually performed in honour of Apollo; the prætor to have the direction of them, and the decemviri to offer sacrifices after the Grecian rite. The senate ordered that this oracle should be observed the rather, because another of the same Marcus, wherein he had foretold the overthrow at Cannæ, had come true; for this reason they gave the prætor 12,000 asces out of the public cash to defray the solemnity. There were sacrificed an ox to Apollo, as also two white goats, and a cow to Latona; all with their horns gilt. Apollo had also a collection made for him, besides what the people who were spectators gave voluntary. The first prætor by whom they were held was P. Cornelius Sylla. For some time they were moveable or indictive; but at length were fixed, under P. Licinius Varus, to the fifth of July, and made perpetual. The men, who were spectators at these games, wore garlands on their heads; the

Apodectæ
||
Apollinarian.

Apollina-
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Apollina-
ris.

the women performed their devotions in the temples at the same time, and at last they caroused together in the vestibles of their houses, the doors standing open. The Apollinarian games were merely scenical; and at first only observed with singing, piping, and other sorts of music; but afterwards there were also introduced all manner of mountebank-tricks, dances, and the like: yet so as that they still remained scenical, no chariot races, wrestling, or the like laborious exercises of the body, being ever practised at them.

APOLLINARIANS, APOLLINARISTS, called also by Epiphanius *Dimarite*, ancient heretics, who denied the proper humanity of Christ, and maintained that the body which he assumed was endowed with a sensitive, and not a rational, soul, but that the Divine Nature supplied the place of the intellectual principle in man. This sect derived its name from Apollinaris, bishop of Laodicea, in the fourth century.

The Apollinarians have been charged with other opinions, such as, the Millenarian and Sabellian, the pre-existence of the body of Christ, and the passion of his Deity; but ecclesiastical writers are not agreed with respect to these and other particulars. Their doctrine was first condemned by a council of Alexandria in the year 362, and afterwards in a more formal manner by a council at Rome in 375; and by another council in 378, which deposed Apollinaris from his bishopric. Notwithstanding all, his doctrine spread through most of the churches of the east; and his followers were subdivided into various sects. In 388, the emperor Theodosius enacted a law, forbidding them to hold assemblies, to have any ecclesiastics or bishops, or to dwell in cities. The rigorous execution of this law, in concurrence with the decrees of different councils, reduced them to a very small number, and their doctrine had no long duration.

APOLLINARIS (Caius Sulpicius), a very learned grammarian, born at Carthage, lived in the 2d century, under the Antonines; he is supposed to be the author of the verses which are prefixed to the comedies of Terence, and contain the arguments of them. He had for his successor in the profession of grammar Helvius Pertinax, who had been his scholar, and was at last emperor.

APOLLINARIS SIDONIUS (Caius Lollius), an eminent Christian writer and bishop in the 5th century, was born of a noble family in France. He was educated under the best masters, and made a prodigious progress in the several arts and sciences, but particularly in poetry and polite literature. After he had left the schools, he applied himself to the profession of war. He married Papianilla, the daughter of Avitus, who was consul, and afterwards emperor, by whom he had three children. But Majorianus in the year 457 having deprived Avitus of the empire, and taken the city of Lyons, in which our author resided, Apollinaris fell into the hands of the enemy. However, the reputation of his learning softened Majorianus's resentments, so that he treated him with the utmost civility, in return for which Apollinaris composed a panegyric in his honour; which was so highly applauded, that he had a statue erected to him at Rome, and was honoured with the title of *Count*. In the year 467 the emperor Anthemius rewarded him for the panegyric, which he had written in honour of him, by raising him to the post of governor of Rome, and afterwards to the dignity of a

patrician and senator, and erecting a statue to him. But he soon quitted these secular employments for the service of the church. The bishopric of Clermont being vacant in 472 by the death of Eparchus, Apollinaris, who was then only a layman, was chosen to succeed him without any interest or solicitation on his part, in which see he acted with the greatest integrity. Clermont being besieged by the Goths, he animated the people to the defence of that city, and would never consent to the surrender of it; so that, when it was taken about the year 480, he was obliged to retire; but he was soon restored by Evariges king of the Goths, and continued to govern the church as he had done before. He died in peace the 21st of August 487; and his festival is still observed in the church of Clermont, where his memory is had in great veneration. He is esteemed the most elegant writer of his age, both in prose and verse. He wrote a great many little pieces; but preserved none but those which he thought were worthy of being continued down to posterity. He collected himself the nine books which we have remaining of his letters. His chief pieces in poetry are the three panegyrics upon the emperors Avitus, Majorianus, and Anthemius. The rest of them are a collection of poems addressed to his friends upon particular subjects. His letters contain a variety of particulars relating to polite literature and profane history.

APOLLINARIUS (Claudius), a learned bishop of Hierapolis, who, about the year 170, presented to Marcus Aurelius an excellent Apology for the Christians.

APOLLINARIUS THE YOUNGER, thus called to distinguish him from his father, called *Apollinarius the Elder*, was first lector or reader of Laodicea, and afterwards bishop of that city. He was universally esteemed the greatest man of his age, both for learning and piety, and a most accurate and nervous defender of the faith against all its enemies: but notwithstanding this, on his advancing some opinions that were not approved, he was anathematized as an heretic by the second general council of Constantinople in 381.

APOLLO, in mythology, a Pagan deity worshipped by the Greeks and Romans. Cicero mentions four of his names: the most ancient of whom was the son of Vulcan; the second a son of Corybas, and born in Crete; the third an Arcadian, called *Nomian*, from his being a great legislator; and the last, to whom the greatest honour is ascribed, the son of Jupiter and Latona.

Apollo had a variety of other names, either derived from his principal attributes, or the chief places where he was worshipped. He was called the *Healer* from his enlivening warmth and cheering influence; *Paan*, from the pestilential heats: to signify the former, the ancients placed the graces in his right hand; and for the latter, a bow and arrows in his left: *Nomius*, or the shepherd, from his fertilizing the earth, and thence sustaining the animal creation: *Delius*, from his rendering all things manifest: *Pythius*, from his victory over Python; *Lycias*, *Phabus*, and *Phaneta*, from his purity and splendor. As Apollo is almost always confounded by the Greeks with the sun, it is no wonder that he should be dignified with so many attributes. It was natural for the most glorious object in nature, whose influence is felt by all creation, and seen by every

Apollina-
rius,
Apollo.

Apollo.

ry animated part of it, to be adorned as the fountain of light, heat, and life. The power of healing diseases being chiefly given by the ancients to medicinal plants and vegetable productions, it was natural to exalt into a divinity the visible cause of their growth. Hence he was also styled the *God of Physic*; and that external heat which cheers and invigorates all nature, being transferred from the human body to the mind, gave rise to the idea of all mental effervescence coming from this god; hence, likewise, poets, prophets, and musicians, are said to be *Numine afflati*, inspired by Apollo.

Whether Apollo was ever a real personage, or only the great luminary, many have doubted. Indeed, Vossius has taken great pains to prove this god to be only a metaphorical being, and that there never was any other Apollo than the sun. "He was styled the *son of Jupiter* (says this author), because that god was reckoned by the ancients the author of the world. His mother was called *Latona*, a name which signifies *hidden*; because, before the sun was created, all things were wrapped up in the obscurity of chaos. He is always represented as beardless and youthful, because the sun never grows old or decays. And what else can his bow and arrows imply, but his piercing beams?" And adds, "that all the ceremonies which were performed to his honour, had a manifest relation to the great source of light which he represented. Whence (he concludes) it is vain to seek for any other divinity than the sun, which was adorned under the name of Apollo." However, though this be in general true, yet it does appear, from many passages in ancient authors, that there was some illustrious personage named *Apollo*, who, after his apotheosis, was taken for the sun; as Osiris and Orus in Egypt, whose existence cannot be called in question, were, after their death, confounded with the sun, of which they became the symbols, either from the glory and splendor of their reigns, or from a belief that their souls had taken up their residence in that luminary.

Of the four Apollos mentioned by Cicero, it appears that the three last were Greeks, and the first an Egyptian; who, according to Herodotus, was the son of Osiris and Isis, and called *Orus*. Pausanias is of the same opinion as Herodotus, and ranks Apollo among the Egyptian divinities. The testimony of Diodorus Siculus is still more express; for in speaking of Isis, after saying that she had invented the practice of medicine, he adds, that she taught this art to her son Orus, named *Apollo*, who was the last of the gods that reigned in Egypt.

It is easy to trace almost all the Grecian fables and mythologies from Egypt. If the Apollo of the Greeks was said to be the son of Jupiter, it was because Orus the Apollo of the Egyptians had Osiris for his father, whom the Greeks confounded with Jupiter. If the Greek Apollo was reckoned the god of eloquence, music, medicine, and poetry, the reason was, that Osiris, who was the symbol of the sun among the Egyptians, as well as his son Orus, had there taught those liberal arts. If the Greek Apollo was the god and conductor of the muses, it was because Osiris carried with him in his expedition to the Indies singing women and musicians. This parallel might be carried on still further;

but enough has been said to prove that the true Apollo was that of Egypt.

To the other perfections of this divinity the poets have added beauty, grace, and the art of captivating the ear and the heart, no less by the sweetness of his eloquence, than by the melodious sounds of his lyre. However, with all these accomplishments, he had not the talent of captivating the fair, with whose charms he was enamoured. But the amours and other adventures related of this god during his residence on earth, are too numerous, and too well known, to be inserted here. His musical contests, however, being more connected with the nature of this work, must not be wholly unnoticed.

To begin, therefore, with the dispute which he had with Pan, that was left to the arbitration of Midas.

Pan, who thought he excelled in playing the flute, offered to prove that it was an instrument superior to the lyre of Apollo. The challenge was accepted; and Midas, who was appointed the umpire in this contest, deciding in favour of Pan, was rewarded by Apollo, according to the poets, with the ears of an ass, for his stupidity—This fiction seems founded upon history. Midas, according to Pausanias, was the son of Gordius and Cybele; and reigned in the Greater Phrygia, as we learn from Strabo. He was possessed of such great riches, and such an inordinate desire of increasing them by the most contemptible parsimony, that, according to the poets, he converted whatever he touched into gold. However, his talent for accumulation did not extend to the acquirement of taste and knowledge in the fine arts; and, perhaps, his dulness and inattention to these provoked some musical poets to invent the fable of his decision in favour of Pan against Apollo. The scholiast upon Aristophanes, to explain the fiction of his long ears, says, that it was designed to intimate that he kept spies in all parts of his dominions.

Marfyas, another player on the flute, was still more unfortunate, than either Pan or his admirer Midas. This Marfyas, having engaged in a musical dispute with Apollo, chose the people of Nyssa for judges. Apollo played at first a simple air upon his instrument; but Marfyas, taking up his pipe, struck the audience so much by the novelty of its tone, and the art of his performance, that he seemed to be heard with more pleasure than his rival. Having agreed upon a second trial of skill, it is said that the performance of Apollo, by accompanying the lyre with his voice, was allowed greatly to excel that of Marfyas upon the flute alone. Marfyas, with indignation, protested against the decision of his judges; urging that he had not been fairly vanquished according to the rules stipulated, because the dispute was concerning the excellence of their several instruments, not their voices; and that it was wholly unjust to employ two arts against one.

Apollo denied that he had taken any unfair advantages of his antagonist, since Marfyas had employed both his mouth and fingers in performing upon his instrument; so that, if he was denied the use of his mouth, he would be still more disqualified for the contention. The judges approved of Apollo's reasoning, and ordered a third trial. Marfyas was again vanquished; and Apollo, inflamed by the violence of the dispute, flew him alive for his presumption. See MARFYAS.

Apollo.

Apollo.

Pausanias relates a circumstance concerning this contest, that had been omitted by Diodorus, which is, that Apollo accepted the challenge from Marsyas, upon condition that the victor should use the vanquished as he pleased.

Diodorus informs us, that Apollo, soon repenting of the cruelty with which he had treated Marsyas, broke the strings of the lyre, and by that means put a stop, for a time, to any farther progress in the practice of that new instrument.

The next incident to be mentioned in the history of Apollo is his defeat of the serpent Python.

The waters of Deucalion's deluge, says Ovid, which had overflowed the earth, left a slime from whence sprung innumerable monsters; and among others the serpent Python, which made great havoc in the country about Parnassus. Apollo, armed with his darts, put him to death; which, physically explained, implies, that the heat of the sun having dissipated the noxious steams, those monsters soon disappeared; or, if this fable be referred to history, the serpent was a robber, who haunting the country about Delphos, and very much infesting those who came thither to sacrifice; a prince, who bore the name of Apollo, or one of the priests of that god, put him to death.

This event gave rise to the institution of the Pythian games, so frequently mentioned in the Grecian history; and it was from the legend of Apollo's victory over the Python that the god himself acquired the name of *Pythius*, and his priestesses that of *Pythias*. The city of Delphos, where the famous oracles were so long delivered, was frequently styled *Pytho*.

As Apollo was the god of the fine arts, those who cultivated them were called *his sons*. Of this number was Philammon of Delphos, whom the poets and mythologists make the twin-brother of Autolychus, by the nymph Chione, and Apollo and Mercury. It is pretended that both these divinities were favoured by the nymph on the same day, and that their fires were known from their different talents. Philammon, a great poet and musician, was reported to be the offspring of the god who presides over those arts; and Autolychus, from the craftiness and subtilty of his disposition, was said to have sprung from Mercury, god of theft and fraud. Philammon is one of the first, after Apollo, upon fabulous record, as a vocal performer, who accompanied himself with the sound of the lyre: his son was the celebrated Thamyris. See *THAMYRIS*.

There can be no doubt but that Apollo was more generally revered in the Pagan world than any other deity; having, in almost every region of it, temples, oracles, and festivals, as innumerable as his attributes: the wolf and hawk were consecrated to him, as symbols of his piercing eyes; the crow and the raven, because these birds were supposed to have by instinct the faculty of prediction; the laurel, from a persuasion that those who slept with some branches of that tree under their heads received certain vapours, which enabled them to prophecy. The cock was consecrated to him, because by his crowing he announces the rising of the sun; and the grasshopper on account of his singing faculty, which was supposed to do honour to the god of music. Most of the ancient poets have celebrated this tuneful insect, but none better than Anacreon, Ode 43.

Plato says that the grasshopper sings all summer with-

out food, like those men who, dedicating themselves to the muses, forget the common concerns of life.

The swan was regarded by the ancients as a bird sacred to Apollo in two capacities; first, as being, like the crow and raven, gifted with the spirit of prediction; and, secondly, for his extraordinary vocal powers. The sweetness of his song, especially at the approach of death, was not only extolled by all the poets of antiquity, but by historians, philosophers, and sages; and to call a great writer the *swan* of his age and nation, was a full acknowledgment of his sovereignty*. Thus Horace calls Pindar *the Theban swan*.

Apollo.

* See the article *A-*

Plutarch, who was himself a priest of Apollo, impressed with the highest respect and veneration for him and for music, in his dialogue upon that art, makes one of his interlocutors say, that an invention so useful and charming could never have been the work of man, but must have originated from some god, such as Apollo, the inventor of the flute and lyre, improperly attributed to Hyagnis, Marsyas, Olympus, and others; and the proofs he urges in support of this assertion, show, if not its truth, at least that it was the common and received opinion.

All dances and sacrifices, says he, used in honour of Apollo, are performed to the sound of flutes: the statue of this god at Delos, erected in the time of Hercules, had in its right-hand a bow; and on the left stood the three graces, who were furnished with three kinds of instruments; the lyre, the flute, and the syrinx. The youth also who carries the laurel of Tempe to Delphos, is accompanied by one playing on the flute; and the sacred presents formerly sent to Delos by the Hyperboreans, were conducted thither to the sound of lyres, flutes, and shepherds pipes. He supports these facts by the testimonies of the poets Alceus, Alceon, and Corinna.

It seems as if the account of Apollo could not be concluded by any thing that is left to offer on the subject, so properly, as by part of the celebrated hymn of Callimachus, which during many ages was performed and heard by the most polished people on the globe, with the utmost religious zeal, at the festivals instituted to this god.

Ha! how the laurel, great APOLLO's tree,
And all the cavern, shakes! Far off, far off,
The man that is unhallow'd: for the god
Approaches. Hark! he knocks: the gates
Feel the glad impulse; and the fever'd bars
Submissive clink against their brazen portals.
Why do the Delian palms incline their boughs,
Self mov'd; and hovering swans, their throats releas'd
From native silence, carol sounds harmonious?
Begin, young men, the hymn: let all your harps
Break their inglorious silence; and the dance,
In mystic numbers trod, explain the music.
But first, by ardent pray'r, and clear lustration,
Purge the contagious spots of human weakness:
Impure no mortal can behold Apollo.
So may you flourish, favour'd by the god,
In youth with happy nuptials, and in age
With silver hairs, and fair descent of children;
So lay foundations for aspiring cities,
And bless your spreading colonies increase.
Pay sacred rev'rence to Apollo's song;
Lest watchful the far-shooting god emit
His fatal arrows. Silent, Nature stands;
And seas subside, obedient to the sound
Of Io! Io Pæan! nor dares Thetis
Longer bewail her lov'd Achilles' death.

F

Apollo,
Apollodoro-
rus.

A P O

[126]

A P O

For Phœbus was his foe. Nor must sad Niobe
In fruitless sorrow persevere, or weep
Even thro' the Phrygian marble. Halpe's mother!
Whose fondness could compare her mortal offspring
To those which fair Latona bore to Jove.
Io! again repeat ye, Io Pæan!

Recite Apollo's praise till night draws on,
The ditty still unfinish'd; and the day
Unequal to the godhead's attributes
Various, and matter copious of your songs.

Sublime at Jove's right hand Apollo sits,
And thence distributes honour, gracious king,
And theme of verse perpetual. From his robe
Flows light ineffable! his harp, his quiver,
And Lætan bow, are gold: with golden sandals
His feet are shod. How rich! how beautiful!
Beneath his steps the yellow min'ral rises;
And earth reveals her treasures. Youth and beauty
Eternal deck his cheek: from his fair head
Perfumes distil their sweets; and cheerful Health,
His duteous hand-maid, through the air improv'd
With lavish hand diffuses scents ambrosial.

The spearman's arm by thee, great god, directed,
Sends forth a certain wound. The laurel'd bard,
Inspir'd by thee, composes verse immortal.
Taught by thy art divine, the sage physician
Eludes the urn, and chains or exiles death.

Perpetual fires shine hallow'd on the altars,
When annual the Carnean feast is held:
The warlike Libyans, clad in armour, lead
The dance; with clanging swords and shields they beat
The dreadful measure: In the chorus join
Their women; brown, but beautiful: such rites
To thee well pleasing

The monstrous Python
Durst tempt thy wrath in vain; for dead he fell,
To thy great strength and golden arms unequal.
Io! while thy unerring hand elanc'd
Another and another dart, the people
Joyfully repeated Io! Io Pæan!
Blance the dart, Apollo; for the safety
And health of man, gracious thy mother bore thee!

PRIOR.

APOLLO *Belvidere*, one in the first class of the ancient statues. The excellence of this statue consists in the expression of something divine, whereas the rest excel only in things that are common to men. This statue may perhaps justly enough claim the preference, even in the superior and distinguished class of the best remains of all antiquity. There are about twenty ancient statues which the moderns have discovered that are referred to the first class, and considered each as the chief beauty in its kind.

APOLLODORUS, born at Damascus, a famous architect under Trajan and Hadrian. He had the direction of the bridge of stone which Trajan ordered to be built over the Danube in the year 104, which was esteemed the most magnificent of all the works of that emperor. Hadrian, one day as Trajan was discoursing with this architect upon the buildings he had raised at Rome, would needs give his judgment, and showed he understood nothing of the matter. Apollodorus turned upon him bluntly, and said to him, Go paint citruls, for you are very ignorant of the subject we are talking upon. Hadrian at this time boasted of his painting citruls well. This insult cost Apollodorus his life.

AROLLODORUS, a celebrated painter of Athens, about 408 years before the birth of Christ, was the first who invented the art of mingling the colours, and of expressing the lights and shades. He was admired also for his judicious choice of subjects, and for the beauty

and strength of colouring surpassed all the masters that went before him. He excelled likewise in statuary.

APOLLODORUS the Athenian, a famous grammarian, the son of Asclepiades and disciple of Aristarchus. He wrote many works not now extant; but his most famous production was the *Bibliotheca*, concerning the origin of the gods. This work consisted of 24 books, but only three are now in being. Several other pieces of his are to be found in Fabricius's *Bibliotheca Græca*. There were various other persons of this name. Scipio Testi, a Neapolitan, has written a treatise of the Apollodoruses, which was printed at Rome in 1555; and Dr Thomas Gale published a work of the same kind in 1675.

APOLLONIA, the name of several ancient cities, particularly of a colony of the Milesians in Thrace, from which Lucullus took away a colossus of Apollo, and placed it in the capitol. The greatest part of the town was situated in a small island on the Euxine, in which was a temple of Apollo (Strabo). Pliny says the colossus was 30 cubits high, and cost 500 talents. There was also an Apollonia at mount Parnassus, near Delphi (Stephanus). Troezen was formerly called *Apollonia*.

APOLLONIA, feasts sacred to Apollo, instituted upon the following occasion. Apollo, having vanquished Python, went with his sister Diana to Ægialea; but, being driven from thence, he removed to the island Crete. The Ægialeans were soon after visited with a plague; upon which, consulting the soothsayers, they were ordered to send seven young men and as many virgins, to appease those deities and bring them back into their country. Apollo and Diana being thus appeased, returned to Ægialea: in memory of which, they dedicated a temple to Pitho, the goddess of persuasion; whence a custom arose of choosing every year seven young men, and as many virgins, to go as it were in search of Apollo and Diana.

APOLLONIA, in geography, a promontory of Africa, upon the coast of Guinea, near the mouth of the river Mancu.

APOLLONIUS, the author of the *Argonautics*, and surnamed *The Rhodian*, from the place of his residence, is supposed to have been a native of Alexandria, where he is said to have recited some portion of his poem while he was yet a youth. Finding it ill received by his countrymen, he retired to Rhodes; where he is conjectured to have polished and completed his work, supporting himself by the profession of rhetoric, and receiving from the Rhodians the freedom of their city. He at length returned, with considerable honour, to the place of his birth; succeeding Eratosthenes in the care of the Alexandrian library in the reign of Ptolemy Euergetes, who ascended the throne of Egypt the year before Christ 246. That prince had been educated by the famous Aristarchus, and rivalled the preceding sovereigns of his liberal family in the munificent encouragement of learning. Apollonius was a disciple of the poet Callimachus; but their connection ended in the most violent enmity, which was probably owing to some degree of contempt expressed by Apollonius for the light compositions of his master. The learned have vainly endeavoured to discover the particulars of their quarrel.—The only work of Apollonius which has descended to modern times is his poem above mentioned, in four books, on the Argonautic expedition.

Apollodoro-
rus
||
Apollonius.

Apollonius, expedition. Both Longinus and Quintilian have assigned to this work the mortifying character of mediocrity: "But (says Mr Hayley) there lies an appeal from the sentence of the most candid and enlightened critics to the voice of Nature; and the merit of Apollonius has little to apprehend from the decision of this ultimate judge. His poems abound in animated description, and in passages of the most tender and pathetic beauty. How finely painted is the first setting forth of the Argo! and how beautifully is the wife of Chiron introduced, holding up the little Achilles in her arms, and showing him to his father Peleus as he sailed along the shore! But the chief excellence in our poet, is the spirit and delicacy with which he has delineated the passion of love in his Medea. That Virgil thought very highly of his merit in this particular, is sufficiently evident from the minute exactness with which he has copied many tender touches of the Grecian poet. Those who compare the third book of Apollonius with the fourth of Virgil, may, I think, perceive not only that Dido has some features of Medea, but that the two bards, however different in their reputation, resembled each other in their genius; and they both excel in delicacy and pathos."—The ancient scholia upon his *Argonautics*, still extant, are extremely useful, and full of learning.

APOLLONIUS, of Perga, a city of Pamphilia, was a great geometrician, under the reign of Ptolemy Evergetes, which reaches from the 2d year of the 133d Olympiad to the 3d year of the 139th. He studied a long time at Alexandria, under the disciples of Euclid; and composed several works, of which that only of the Conics remains.

APOLLONIUS, a Pythagorean philosopher, born at Tyana in Cappadocia, about the beginning of the first century. At 16 years of age he became a strict observer of Pythagoras's rules, renouncing wine, women, and all sorts of flesh; not wearing shoes, letting his hair grow, and wearing nothing but linen. He soon after set up for a reformer of mankind, and chose his habitation in a temple of Æsculapius, where he is said to have performed many wonderful cures. Philostratus has wrote the life of Apollonius, in which there are numberless fabulous stories recounted of him. We are told that he went five years without speaking; and yet, during this time that he stopped many seditions in Cilicia, and Pamphylia: that he travelled, and set up for a legislator; and that he gave out he understood all languages, without having ever learned them: that he could tell the thoughts of men, and understood the oracles which birds gave by their singing. The Heathens were fond of opposing the pretended miracles of this man to those of our Saviour; and by a treatise which Eusebius wrote against one Hierocles, we find that the drift of the latter, in the treatise which Eusebius refutes, seems to have been to draw a parallel betwixt Jesus Christ and Apollonius, in which he gives the preference to this philosopher. Mr Du Pin has wrote a confutation of Philostratus's life of Apollonius.

Apollonius wrote some works, viz. four books of judicial astrology; a treatise upon the sacrifices, showing what was proper to be offered to each deity; and a great number of letters; all of which are now lost.

APOLLOS, in Scripture-history, a Jew of Alex-

andria, who came to Ephesus during the absence of St Paul, who was gone to Jerusalem (Acts xviii. 24.) Apollos was an eloquent man, and well versed in the Scriptures; and as he spoke with zeal and fervour, he taught diligently the things of God: but knowing only the baptism of John, he was no more than a catechumen, or one of the lowest order of Christians, and did not as yet distinctly know the mysteries of the Christian doctrine. However, he knew that Jesus Christ was the Messiah, and declared himself openly to be his disciple. When therefore he was come to Ephesus, he began to speak boldly in the synagogue, and to show that Jesus was the Christ. Aquila and Priscilla having heard him, took him home with them; instructed him more fully in the ways of God; and baptized him, probably in the name of Jesus Christ.

Some time after this he had a mind to go into Achaia; and the brethren having exhorted him to undertake this journey, they wrote to the disciples, desiring them to receive him. He arrived at Corinth; and was there very useful in convincing the Jews out of the Scriptures, and demonstrated to them that Jesus was the Christ. Thus he watered what St Paul had planted in this city (1 Cor. iii. 6.) but the great fondness which his disciples had for his person had like to have produced a schism; some saying, "I am of Paul; others, I am of Apollos; I am of Cephas." However, this division which St Paul speaks of in the chapter last quoted, did not prevent that apostle and Apollos from being closely united by the bands of charity. Apollos hearing that the apostle was at Ephesus, went to meet him, and was there when St Paul wrote the first epistle to the Corinthians; wherein he testifies that he had earnestly entreated Apollos to return to Corinth, but hitherto had not been able to prevail with him; that, nevertheless, he gave him room to hope that he would go when he had an opportunity. St Jerome says, that Apollos was so dissatisfied with the division which had happened upon his account at Corinth, that he retired into Crete with Zena, a doctor of the law; and that this disturbance having been appeased by the letter which St Paul wrote to the Corinthians, Apollos returned to this city, and was bishop thereof. The Greeks make him bishop of Duras; others say, he was bishop of Iconium in Phrygia; and others, that he was bishop of Cæsarea.

APOLLYON, a Greek word that signifies *the destroyer*, and answers to the Hebrew *Abaddon*. St John in the Revelations (ix. 11.) says, that an angel having opened the bottomless pit, a thick smoke issued out of it; and with this smoke locusts, like horses, prepared for battle, and commanded by the angel of the bottomless pit, called in Hebrew *Abaddon*, but in the Greek *Apollyon*.

APOLOGETIC, **APOLOGETICAL**, something said or written, by way of excuse or apology, for any action or person.

The Apologetic of Tertullian is a work full of strength and spirit. He there vindicates the Christians from all that had been objected to them; particularly from the abominable crimes said to be perpetrated at their meetings, and their want of love and fidelity to their country. The ground of this last accusation was, their refusing to take the accustomed oaths, and swear by the tutelar gods of the empire.—Tertullian addresses

Apollonius,
Apollos.

Apollyon,
Apologetic.

Apologue
||
Apono.

dresses his Apologetic to the magistrates of Rome, the emperor Severus being then absent.

APOLOGUE, in matters of literature, an ingenious method of conveying instruction by means of a feigned relation called a *moral fable*.

The only difference between a parable and an apologue is, that the former, being drawn from what passes among mankind, requires probability in the narration; whereas the apologue, being taken from the supposed actions of brutes, or even of things inanimate, is not tied down to the strict rules of probability. AEsop's fables are a model of this kind of writing.

APOLOGY, a Greek term, literally importing an excuse or defence of some person or action.

APOMELI, among ancient physicians, a decoction of honey and vinegar, much used as a detergent, promoter of stool, urine, &c.

APOMYOS DEUS, (*απο*, and *μυια* fly), in the Heathen mythology, a name under which Jupiter was worshipped at Elis, and Hercules as well as Jupiter at the Olympic games. These deities were supplicated under this name, to destroy or drive away the vast number of flies which always attended at the great sacrifices; and in those which accompanied the Olympic games, the first was always to the Apomyos, or Myiagrus Deus, that he might drive away the flies from the rest. The usual sacrifice was a bull.

APONEUROSIS, among physicians, a term sometimes used to denote the expansion of a nerve or tendon in the manner of a membrane; sometimes for the cutting off a nerve; and, finally, for the tendon itself.

APONO (Peter d'), one of the most famous philosophers and physicians of his age, born in the year 1250, in a village about four miles from Padua. He studied some time at Paris, and was there promoted to the degree of doctor in philosophy and physic. When he came to practise as a physician, he is said to have insisted on very large sums for his visits: we are not told what he demanded for the visits he made in the place of his residence; but it is affirmed, that he would not attend the sick in any other place under 150 florins a day; and when he was sent for by Pope Honorius IV. he demanded 400 ducats for each day's attendance. He was suspected of magic, and prosecuted by the Inquisition on that account. "The common opinion of almost all authors (says Naude) is, that he was the greatest magician of his age; that he had acquired the knowledge of the seven liberal arts, by means of the seven familiar spirits, which he kept inclosed in a crystal; and that he had the dexterity to make the money he had spent come back into his purse." The same author adds, that he died before the process against him was finished, being then in the 80th year of his age; and that, after his death, they ordered him to be burnt in effigy, in the public place of the city of Padua; designing thereby to strike a fear into others of incurring the like punishment; and to suppress the reading three books which he had wrote; the first being the *Heptameron*, which is printed at the end of the first volume of Agrippa's work; the second, that which is called by Trithemius, *Elucidareum ne-aromanticum Petri de Albano*; and the last, that which is intitled by the same author, *Liber experimentorum*

mirabilium de annulis secundum xxviii. mansiones lune. His body being secretly taken up by his friends, escaped the vigilance of the inquisitors, who would have burnt it. It was removed several times, and was at last placed in the church of St Augustin, without an epitaph or any mark of honour. The most remarkable book which Apona wrote, was that which procured him the surname of *Conciliator*; he wrote also a piece intitled *De medicina omnimoda*. There is a story told of him, that, having no well in his house, he caused his neighbour's to be carried into the street by devils, when he heard they had forbidden his maid fetching water there. He had much better (says Mr Bayle) have employed the devils to make a well in his own house, and have stopped up his neighbour's; or, at least, transported it into his house, rather than into the street.

APONOGETON: A genus of the digynia order, belonging to the heptandria class of plants, which has no English name. The calyx is an oblong omentum; there is no corolla; and the capsule are three-seeded. There are two species, natives of the Indies.

APONUS, a hamlet near Patavium with warm baths. It was the birth-place of Livy, (Martial); and is now called *Albano*. E. Long. 10. Lat. 45. 15.

APOPEMPTIC, in the ancient poetry, a hymn addressed to a stranger on his departure from a place to his own country. The ancients had certain holidays, wherein they took leave of the gods with *apopemptic* songs, as supposing them returning each to his own country. The deities having the patronage of divers places, it was but just to divide their presents, and allow some time to each. Hence it was, that among the Delians and Milesians we find feasts of Apollo, and among the Argians feasts of Diana, called *Epidemia*, as supposing these dieties then more peculiarly resident among them. On the last day of the feast they dismissed them, following them to the altars with *apopemptic* hymns.

APOPHASIS, a figure in rhetoric, by which the orator, speaking ironically, seems to wave what he would plainly insinuate: as, *Neither will I mention those things; which, if I should, you notwithstanding could neither confute, nor speak against them*.

APOPHLEGMATIZANTS, in pharmacy, medicines proper to clear the head from superfluous phlegm, whether by spitting or by the nose.

APOPHTHEGM, a short, sententious, and instructive remark, pronounced by a person of distinguished character. Such is that of Cyrus: *He is unworthy to be a magistrate, who is not better than his subjects*. Or this: *He that will not take care of his own business, will be forced to take care of that of others*. Or that of Artaxerxes Mnemon, when reduced to hunger by the loss of his baggage: *How much pleasure have I hitherto lived a stranger to?* Or that of Cato, *Homines nihil agendo discunt male agere*. Or, finally, that of Augustus, *Festina lente*. The apophthegms of Plutarch are well known.

APOPHYGE, in architecture, a concave part or ring of a column, lying above or below the flat member. The French call it *le corge d'en bas*, or *d'en haut*; the Italians, *cavo di basso*, or *di sopra*; and also *il vivo di basso*. The apophyge originally was no more than the

Aponogeton
||
Apophyge.

Apophysis the ring, or ferril, at first fixed on the extremities of wooden pillars, to keep them from splitting; which afterwards was imitated in stone.

Apostacy.

APOPHYSIS, in anatomy, a process or protuberance of a bone. See **ANATOMY**.

APOPLEXY, a distemper in which the patient is suddenly deprived of all his senses, and of voluntary motion. See **MEDICINE-Index**.

APORIA, is a figure in rhetoric, by which the speaker shows, that he doubts where to begin for the multitude of matter, or what to say in some strange and ambiguous thing; and doth, as it were, argue the case with himself. Thus Cicero says, *Whether he took them from his fellows more impudently, gave them to a harlot more lasciviously, removed them from the Roman people more wickedly, or altered them more presumptuously, I cannot well declare.*

APORON, or **APORIME**, a problem difficult to resolve, and which has never been resolved, though it be not, in itself, impossible.

The word is derived from *απορος*, which signifies something very difficult, and impracticable; being formed from the privative *α* and *πορος*, passage. Such we conceive the quadrature of the circle; the duplication of the tube; the trisection of an angle, &c. When a question was proposed to any of the Greek philosophers, especially of the sect of Academists; if he could not give a solution, his answer was, *Απορος*, *I cannot see through it.*—This word is also used by some law writers for an inexplicable speech or discourse.

APOSIOPEISIS, in rhetoric, otherwise called *reticency*, and *suppression*; a figure, by which a person really speaks of a thing, at the same time that he makes a show as if he would say nothing of it. The word comes from *αποσιωπαω*, *I am silent.*—It is commonly used to denote the same with **ELLIPSIS**. Jul. Scaliger distinguishes them. The latter, according to him, being only the suppression of a word; as, *me, me; adsum qui feci*; the former, the omitting to relate some part of the action; as,

*Dixerat, atque illam media inter talia ferro
Collapsam adspiciunt*—

where the poet does not mention how Dido killed herself.—This figure is of use to keep up the grandeur and sublimity of a discourse.

APOSPHRAGISMA, (from *απο*, and *σφραγιζω*, *I seal*,) in antiquity, the figure or impression of a seal.—It was forbid among the ancients to have the figure or image of God on their rings and seals. To this purpose the precept of Pythagoras, *Εν δακτυλῳ εἰκονα θεοῦ μη περιφέρειν!* But in process of time, this was little regarded; it was usual enough to have the figures of Egyptian and other deities, as well as of heroes, monsters, friends, ancestors, and even brutes, on their *dactyli*, or ring-seals. Thus Cæsar had the image of Venus, Pollio of Alexander, Augustus of the *sphinx*, Pompey of a frog, Lentulus of his grandfather, &c.

APOSTACY, the abandoning the true religion. The primitive Christian church distinguished several kinds of apostacy. The first, of those who went over entirely from Christianity to Judaism; the second, of those who mingled Judaism and Christianity together; and the third, of those who complied so far with the

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Jews, as to communicate with them in many of their unlawful practices, without making a formal profession of their religion. But the fourth sort was of those who, after having been some time Christians, voluntarily relapsed into Paganism.

The perversion of a Christian to Judaism, Paganism, or other false religion, was punished by the emperors Constantius and Julian with confiscation of goods; to which the emperors Theodosius and Valentinian added capital punishment, in case the apostate endeavoured to pervert others to the same iniquity. A punishment too severe for any temporal laws to inflict; and yet the zeal of our ancestors imported it into this country; for we find by Bracton, that in his time apostates were to be burnt to death. Doubtless the preservation of Christianity, as a national religion, is, abstracted from its own intrinsic truth, of the utmost consequence to the civil state: which a single instance will sufficiently demonstrate. The belief of a future state of rewards and punishments, the entertaining just ideas of the moral attributes of the supreme Being, and a firm persuasion that he superintends and will finally compensate every action in human life (all which are clearly revealed in the doctrines, and forcibly inculcated by the precepts, of our saviour Christ), these are the grand foundation of all judicial oaths; which call God to witness the truth of those facts, which perhaps may be only known to him and the party attesting: all moral evidence therefore, all confidence in human veracity, must be weakened by apostacy, and overthrown by total infidelity. Wherefore all affronts to Christianity, or endeavours to depreciate its efficacy, in those who have once professed it, are highly deserving of censure. But yet the loss of life is a heavier penalty than the offence, taken in a civil light, deserves; and, taken in a spiritual light, our laws have no jurisdiction over it. This punishment, therefore, has long ago become obsolete; and the offence of apostacy was for a long time the object only of the ecclesiastical courts, which corrected the offender *pro salute anime*. But about the close of the last century, the civil liberties to which we were then restored being used as a cloke of maliciousness, and the most horrid doctrine subversive of all religion being publicly avowed both in discourse and writings, it was thought necessary again for the civil power to interpose, by not admitting those miscreants to the privileges of society, who maintained such principles as destroyed all moral obligation. To this end it was enacted by statute 9 and 10 W. III. c. 32. That if any person educated in, or having made profession of, the Christian religion, shall by writing, printing, teaching, or advised speaking, deny the Christian religion to be true, or the holy Scriptures to be of divine authority, he shall upon the first offence be rendered incapable to hold any office or place of trust; and, for the second, be rendered incapable of bringing any action, or of being guardian, executor, legatee, or purchaser of lands, and shall suffer three years imprisonment without bail. To give room, however, for repentance, if, within four months after the first conviction, the delinquent will in open court publicly renounce his error, he is discharged for that once from all disabilities.

APOSTASIS, in medicine, the same with abscess.

APOSTATE, one who deserts his religion. Among the

Apostacy

Apostate.

R.

the

Apostata
||
Apostle.

the Romanists, it signifies a man who, without a legal dispensation, forsake a religious order of which he had made profession. Hence,

APOSTATA CAPIENDO, in the English law, a writ that formerly lay against a person who, having entered into some order of religion, broke out again, and wandered up and down the country.

A POSTERIORI, or demonstration *à posteriori*. See DEMONSTRATION.

APOSTIL, in matters of literature, the same with a marginal note.

APOSTLE properly signifies a messenger or person sent by another upon some business; and hence, by way of eminence, denotes one of the disciples commissioned by Jesus Christ to preach the gospel.

Our blessed Lord selected twelve out of the number of his disciples to be invested with the apostleship. Their names were Simon Peter, Andrew, James the greater, John, Philip, Bartholomew, Thomas, Matthew, James the less, Jude surnamed Lebbeus or Thaddeus, Simon the Canaanite, and Judas Iscariot. Of these Simon, Andrew, James the greater, and John, were fishermen; and Matthew a publican, or receiver of the public revenues: of what profession the rest were, we are not told in Scripture; though it is probable they were fishermen.

There are various conjectures as to the reason of our Saviour's making choice of *twelve* apostles. The most probable is, that it might be in illusion to the twelve patriarchs, as the founders of their several tribes; or to the twelve chief heads or rulers of those tribes, of which the body of the Jewish nation consisted. This opinion seems to be countenanced by what our Saviour tells his apostles, that "when the Son of man shall sit in the throne of his glory, *they* also shall sit upon twelve thrones judging the twelve tribes of Israel."

Our Lord's first commission to his apostles was in the third year of his public ministry, about eight months after their solemn election; at which time he sent them out by two and two. They were to make no provision of money for their subsistence in their journey, but to expect it from those to whom they preached. They were to declare, that the kingdom of heaven, or the Messiah, was at hand; and to confirm their doctrine by miracles. They were to avoid going either to the Gentiles or to the Samaritans, and to confine their preaching to the people of Israel. In obedience to their Master, the apostles went into all the parts of Palestine inhabited by the Jews, preaching the gospel, and working miracles. The evangelical history is silent as to the particular circumstances attending this first preaching of the apostles; and only informs us, that they returned, and told their Master of all that they had done.

Their second commission, just before our Lord's ascension into heaven, was of a more extensive and particular nature. They were now not to confine their preaching to the Jews, but to "go and teach *ALL* nations, baptizing them in the name of the Father, and of the Son, and of the Holy Ghost." Accordingly they began publicly, after our Lord's ascension, to exercise the office of their ministry, working miracles daily in proof of their mission, and making great numbers of converts to the Christian faith. This alarmed the Jewish Sanhedrim; whereupon the apostles were

apprehended, and, being examined before the high-priest and elders, were commanded not to preach any more in the name of Christ. But this injunction did not terrify them from persisting in the duty of their calling; for they continued daily, in the temple, and in private houses, teaching and preaching the gospel.

After the apostles had exercised their ministry for twelve years in Palestine, they resolved to disperse themselves in different parts of the world, and agreed to determine by lot what parts each should take. According to this division, St Peter went into Pontus, Galatia, and those other provinces of the Lesser Asia. St Andrew had the vast northern countries of Scythia and Sogdiana allotted to his portion. St John's was partly the same with Peter's, namely the Lesser Asia. St Philip had the Upper Asia assigned to him, with some parts of Scythia and Colchis. Arabia Felix fell to St Bartholomew's share. St Matthew preached in Chaldaea, Persia, and Parthia. St Thomas preached likewise in Parthia; as also to the Hyrcanians, Bactrians, and Indians. St James the less continued in Jerusalem, of which church he was bishop. St Simon had for his portion Egypt, Cyrene, Libya, and Mauritania; St Jude Syria and Mesopotamia; and St Matthias, who was chosen in the room of the traitor Judas, Cappadocia and Colchis. Thus, by the dispersion of the apostles, Christianity was very early planted in a great many parts of the world. We have but very short and imperfect accounts of their travels and actions.

In order to qualify the apostles for the arduous task of converting the world to the Christian religion, they were, in the first place, miraculously enabled to speak the languages of the several nations to whom they were to preach: and, in the second place, were endowed with the power of working miracles, in confirmation of the doctrines they taught; gifts which were unnecessary, and therefore ceased, in the after ages of the church, when Christianity came to be established by the civil power.

St Paul is frequently called the *apostle*, by way of eminence; and the *apostle of the Gentiles*, because his ministry was chiefly made use of for the conversion of the Gentile world, as that of St Peter was for the Jews, who is therefore styled the *apostle of the circumcision*. The several apostles are usually represented with their respective badges or attributes; St Peter with the keys; St Paul with a sword; St Andrew with a cross or saltier; St James minor with a fuller's pole; St John with a cup, and winged serpent flying from it; St Bartholomew with a knife; St Philip with a long staff, whose upper end is formed into a cross; St Thomas with a lance; St Matthew with a hatchet; St Matthias with a battle-ax; St James major with a pilgrim's staff and a gourd-bottle; St Simon with a saw; and St Jude with a club.

This appellation was also given to the ordinary travelling ministers of the church.—Thus St Paul, in the epistle to the Romans, xvii. 7. says, "Salute Andronicus and Jenia, my kinsmen and fellow-prisoners, who are of note among the apostles." It was likewise a title given to those sent by the churches to carry their alms to the poor of other churches. This usage they borrowed from the synagogues, who called those whom they sent on this message by the same name; and the function

Apostle.

Apostle. function or office itself *αποστολη*, *apostle*, q. d. *mission*. Thus St Paul, writing to the Philippians, tells them, that Epaphroditus their apostle had ministered to his wants, ch. ii. 25.

The appellation is given in like manner to those persons who first planted the Christian faith in any place. Thus Dionysius of Corinth is called the *apostle of France*; Xavier the *apostle of the Indies*, &c. In the East Indies the Jesuit missionaries are also called *apostles*.

APOSTLE is also used among the Jews for a kind of officer anciently sent into the several parts and provinces in their jurisdiction, by way of visitor or commissary, to see that the laws were duly observed, and to receive the monies collected for the reparation of the temple, and the tribute payable to the Romans. The Theodosian code, lib. 14. *De Judais*, calls those *apostoli*, *qui ad exigendum aurum atque argentum a patriarcha certo tempore diriguntur*. Julian the apostate remitted the Jews the *apostole*, *αποστολη*; that is, as he himself explains it, the tribute they had been accustomed to send him. These apostles were a degree below the officers of the synagogues called *patriarchs*, and received their commissions from them. Some authors observe, that St Paul had borne this office; and that it is this he alludes to in the beginning of the epistle to the Galatians: as if he had said, Paul, no longer an apostle of the synagogue, nor sent thereby to maintain the law of Moses, but now an apostle and envoy of Jesus Christ, &c. St Jerom, though he does not believe that St Paul had been an apostle of this kind, yet imagines that he alludes to it in the passage just cited.

APOSTLE, in the Greek liturgy, is particularly used for a book containing the epistles of St Paul, printed in the order wherein they are to be read in churches, through the course of the year. Another book of the like kind, containing the Gospels, is called *Ευαγγελιον*, *Gospel*.—The apostle, of late days, has also contained the other canonical epistles, the Acts of the Apostles, and the Revelations. Hence it is also called *Acts of the Apostles*, *Πραξαποστολος*; that being the first book in it.

APOSTLE is also thought by many to have been the original name for bishops, before the denomination *bishop* was appropriated to their order. Thus Theodorus says expressly, the same persons were anciently called promiscuously both bishops and presbyters, whilst those who are now called bishops were called *apostles*. In the arsenal of Bremen, there are twelve pieces of cannon called the *Twelve Apostles*, on a supposition that the whole world must be convinced, and acquiesce in the preaching of such apostles.

APOSTLES Creed: A formula, or summary of the Christian faith, drawn up, according to Ruffinus, by the apostles themselves: who, during their stay at Jerusalem, soon after our Lord's ascension, agreed upon this *creed*, as a rule of faith, and as a *word of distinction* by which they were to know friends from foes. Baronius, and some other authors, conjecture, that they did not compose it till the second year of the reign of Claudius, a little before their dispersion. As to their manner of composing it, some fancy, that each apostle pronounced his article, which is the reason of its being called *symbolum apostolicum*, it being made up

of sentences jointly contributed, after the manner of persons paying each their club (*symbolum*) or share of a reckoning.

But there are reasons which may induce us to question whether the apostles composed any such creed as this. For, first, neither St Luke in the acts, nor any other ecclesiastical writer before the 5th century, make any mention of an assembly of the apostles in order to the composing of a creed. Secondly, the fathers of the three first centuries, in disputing against the heretics, endeavour to prove that the doctrine contained in this creed was the same which the apostles taught; but they never pretend that the apostles composed it. Thirdly, if the apostles had made this creed, it would have been the same in all churches, and in all ages; and all authors would have cited it after the same manner. But the case is quite otherwise. In the second and third ages of the church, there were as many creeds as authors, and one and the same author sets down the creed after a different manner in several places of his works; which is an evidence that there was not at that time any creed which was reputed to be the apostles. In the 4th century, Ruffinus compares together the three ancient creeds of the churches of Aquileia, Rome, and the East, which differ very considerably in the terms. Besides, these creeds differed not only in the terms and expressions, but even in the articles, some of which were omitted in one or other of them; such as those of the *descent into hell*, the *communion of the saints*, and the *life everlasting*. From these reasons it may be gathered, that tho' this creed may be said to be that of the apostles in regard to the doctrines contained therein, yet it is not to be referred to them as the authors and first composers of it. Who was the true author of it, is not so easy to determine; though its great antiquity may be inferred from hence, that the whole form, as it now stands in the English liturgy, is to be found in the works of St Ambrose and Ruffinus, the former of whom flourished in the 3d century, and the latter in the 4th century.

The primitive Christians, in regard they always concealed this and their other mysteries, did not publicly recite the creed, except at the times of baptism; which, unless in cases of necessity, were only at Easter and Whitsuntide. The constant repeating it was not introduced into the church till the end of the 5th century; about which time Petrus Gnapheus, bishop of Antioch, prescribed the recital of it every time divine service was performed.

APOSTOLARE, APOSTOLICARE, *apostolizing*, in some middle-age writers, denotes the being preferred to the dignity of pope.

APOSTOLATE, in a general sense, is used for mission. In this sense, Olearius has a discourse concerning the apostolate of Christ.

APOSTOLATE more properly denotes the dignity or office of an apostle of Christ; but it is also used, in ancient writers, for the office of a bishop. In this sense we meet with several letters, petitions, requests, &c. directed to bishops, under the title of your *apostolate*, or *apostolatus vester*. But as the title *apostolicus* had been appropriated to the pope, so that of *apostolate* became at length restrained to the sole dignity of the popedom. Every bishop's see was anciently dignified with the title of *sedes apostolica*, an apostolical

Apostoli fee, which is now the peculiar denomination of the fee of Rome.

Apostolici. APOSTOLI, in law, denote those letters missive which are demanded in cases of appeal.

APOSTOLIC, APOSTOLICAL, something that relates to the apostles, or descends from them. Thus we say, the *apostolical* age, *apostolical* doctrine, *apostolical* character, constitutions, traditions, &c.

APOSTOLIC, in the primitive church, was an appellation given to all such churches as were founded by the apostles; and even to the bishops of those churches, as being the reputed successors of the apostles.—These were confined to four, viz. Rome, Alexandria, Antioch, and Jerusalem. In after times, other churches assumed the same quality, on account, principally, of the conformity of their doctrine with that of the churches which were apostolical by foundation, and because all bishops held themselves successors of the apostles, or acted in their dioceses with the authority of apostles.

The first time the term *apostolical* is attributed to bishops, as such, is in a letter of Clovis to the council of Orleans, held in 511, though that king does not there expressly denominate them *apostolical*, but (*apostolica sede dignissimi*) highly worthy of the apostolical see. In 581, Guntram calls the bishops, met at the council of Mafon, *apostolical* pontiffs, *apostolici pontifices*.

In progress of time, the bishop of Rome growing in power above the rest, and the three patriarchates of Alexandria, Antioch, and Jerusalem, falling into the hands of the Saracens, the title *apostolical* was restrained to the pope and his church alone. Though some of the popes, and St Gregory the Great, not contented to hold the title by this tenure, began, at length, to insist, that it belonged to them by another and peculiar right, as being the successors of St Peter. The country of Rheims in 1049 declared that the pope was the sole apostolical primate of the universal church. And hence a great number of apostolicals; *apostolical* see, *apostolical* nuncio, *apostolical* notary, *apostolical* brief, *apostolical* chamber, *apostolical* vicar, &c.

APOSTOLICAL Constitutions. See CONSTITUTION.

APOSTOLICAL Traditions. See TRADITION.

APOSTOLICAL Fathers is an appellation usually given to the writers of the first century who employed their pens in the cause of Christianity. Of these writers, Cotelierius, and after him Le Clerc, have published a collection in two volumes, accompanied both with their own annotations and the remarks of other learned men.

APOSTOLIANS, a sect of the Mennonites, which first sprung up in the year 1664, and derived its name from Apostool, one of the Mennonite ministers at Amsterdam. They concurred with them in doctrine, and admitted to their communion those only who professed to believe all the sentiments which are contained in their public confession of faith.

APOSTOLICI, or APOSTOLICS, was a name assumed by three different sects, on account of their pretending to imitate the manner and practice of the apostles. The first apostolici, otherwise called *Apotactitæ* and *Apotactici*, rose out of the Encratitæ, and Cathari, in the third century. They made profession of abstaining from marriage, and the use of wine, flesh, money, &c.

Gerhard Sagarelli was the founder of the second sect; he obliged his followers to go from place to place as the apostles did, to wander about clothed in white, with long beards, dishevelled hair, and bare heads, accompanied with women, whom they called their spiritual sisters. They likewise renounced all kinds of property and possessions, inveighed against the growing corruption of the church of Rome, predicted its overthrow, and the establishment of a purer church on its ruins. Sagarelli was burnt alive at Parma in the year 1300, and was afterwards succeeded by Dulcinus, who added to the character of an apostle those of a prophet and a general, and carried on a bloody and dreadful war for the space of more than two years against Raynerius, bishop of Vercelli; he was at length defeated, and put to death in a barbarous manner in the year 1307. Nevertheless, this sect subsisted in France, Germany, and in other countries, till the beginning of the fifteenth century, when it was totally extirpated under the pontificate of Boniface IX.

The other branch of apostolici were of the twelfth century. These also condemned marriage, preferring celibacy, and calling themselves the chaste brethren and sisters; though each was allowed a spiritual sister, with whom he lived in a domestic relation; and on this account they have been charged with concubinage: they held it unlawful to take an oath; they set aside the use of baptism; and in many things imitated the Manichees. Bernard wrote against this sect of apostolici.

APOSTOLICUM is a peculiar name given to a kind of song or hymn, anciently used in churches. The apostolicum is mentioned by Greg. Thaumaturgus as used in his time. Vossius understands it as spoken of the apostles creed: Suicer thinks this impossible, for that this creed was then unknown in the churches of the east.

APOSTROPHE, in rhetoric, a figure by which a person who is either absent or dead is addressed as if he were present, and attentive to us. This figure is, in boldness, a degree lower than the address to personified objects (see PERSONIFICATION); since it requires a less effort of imagination to suppose persons present who are dead or absent, than to animate insensible beings and direct our discourse to them. The poems of Ossian abound with the most beautiful instances of this figure. "Weep on the rocks of roaring winds, O Maid of Inistore! Bend thy fair head over the waves, thou fairer than the ghost of the hills when it moves in a sun-beam at noon over the silence of Morven! He is fallen! Thy youth is low; pale beneath the sword of Cuchullin!"

APOSTROPHE, in grammar, the contraction of a word by the use of a comma: as *call'd* for *called*, *tho'* for *though*.

APOTACTITÆ, or APOTACTICI, an ancient sect, who affecting to follow the evangelical counsels of poverty, and the examples of the apostles and primitive Christians, renounced all their effects and possessions. It does not appear that they gave into any errors during their first state; some ecclesiastical writers assure us they had divers holy virgins and martyrs under the persecution of Dioclesian in the fourth century; but they afterwards fell into the opinions of the Encratitæ, and taught that the renouncing of all riches was not only

Apostol-
cum
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Apotacti-
tæ.

Apoteichifmus || *Apotheosis*
 only a matter of counsel and advice, but of precept and necessity. And hence the sixth law in the Theodocian code joins the *Apoteichis* with the *Eunomians* and *Ariana*.

APOTEICHISMUS, in the ancient military art, a kind of line of circumvallation drawn round a place in order to besidge it. This was also called *periteichismus*. The first thing the ancients went about, when they designed to lay close siege to a place, was the *apoteichismus*; which sometimes consisted of a double wall or ramparts, raised of earth; the innermost to prevent sudden sallies from the town, the outermost to keep off foreign enemies from coming to the relief of the besieged. This answered to what are called *lines of contravallation* and *circumvallation* among the moderns.

APOTHECARY, one who practises the art of pharmacy. In London, the apothecaries are one of the city-companies. They were incorporated by a charter from king James I. procured at the solicitation of Dr Mayerne and Dr Aitkins; till that time they only made a part of the grocers company; plums, sugar, spice, Venice treacle, mithridate, &c. were sold in the same shop and by the same person. The reason of separating them was that medicines might be better prepared, and in opposition to divers persons who imposed unwholesome remedies on the people. By an act which was made perpetual in the ninth year of George I. they are exempted from serving upon juries, or in ward and parish offices. They are obliged to make up their medicines according to the formulas prescribed in the college dispensatory; and are liable to have their shops visited by the censors of the college, who are empowered to destroy such medicines as they think not good.

They have a hall in Black Friars, where there are two fine laboratories, out of which all the surgeons chests are supplied with medicines for the royal British navy.

To his majesty belong two apothecaries: the salary to the first, 320 l. to the second, 275 l.—To the household belong also two.

The charitable dispensation of medicines by the Chinese is well deserving notice. They have a stone, which is ten cubits high, erected in the public squares of their cities; on this stone are engraved the names of all sorts of medicines with the price of each; and when the poor stand in need of any relief from physic, they go to the treasury, where they receive the price each medicine is rated at.

APOTHECARY, *Apothecarius*, in writers of the middle age, denotes a shop-keeper, or ware-house keeper.

APOTHECARIUS is also used to denote a store-keeper, or officer appointed to have the direction of a magazine, granary, &c. In which sense *apothecarii* is sometimes rendered by *horarii* and *rationarii*.

APOTHEOSIS, in antiquity, an heathen ceremony, whereby their emperors and great men were placed among the gods. The word is derived from *απο*, and *θεος*, *God*.

After the apotheosis, which they also called *deification* and *consecration*, temples, altars, and images, were erected to the new deity; sacrifices, &c. were offered, and colleges of priests instituted.

It was one of the doctrines of Pythagoras which he had borrowed from the Chaldees, that virtuous persons after their death were raised into the order of the gods.

And hence the ancients deified all the inventors of things useful to mankind; and those who had done any important service to the commonwealth.—Tiberius proposed to the Roman senate the apotheosis of Jesus Christ, as is related by Eusebius, Tertullian, and Chrysostom.

Juvenal rallying the frequent apotheoses, introduces poor Atlas, complaining that he was ready to sink under the burden of so many new gods as were every day added to the heavens. Seneca ridicules the apotheosis of Claudius with admirable humour.

The ceremony, according to Herodian's description, was as follows: After the body of the deceased had been burnt with the usual solemnities, an image of wax, exactly resembling him, was placed on an ivory couch, where it lay for seven days, attended by the senate and ladies of the highest quality in mourning; and then the young senators and knights bore the bed of state through the *via sacra* to the old forum, and from thence to the *Campus Martius*, where it was deposited upon an edifice built in form of a pyramid. The bed being thus placed amidst a quantity of spices and other combustibles, and the knights having made a solemn procession round the pile, the new emperor, with a torch in his hand set fire to it, whilst an eagle, let fly from the top of the building, and mounting in the air with a firebrand, was supposed to convey the soul of the deceased to heaven; and thenceforward he was ranked among the gods.

We often meet with the consecration or apotheosis of emperors represented on medals; where we see the pyramids of several stories, each growing less and less; we see also the eagles flying away with the souls of the deceased emperors. A gem in the museum of Brandenburg represents the apotheosis of Julius Cæsar, mounted upon the celestial globe, and holding an helm in his hand, as if he were now the governor of heaven, as before of the earth. See **DEIFICATION**.

APOTHERAPIA, (from *αποθεραπεινα*, *I cure*), in physic, properly denotes a complete or finished cure.

APOTHERAPIA is also used in the gymnastic art, for the last part of all regular exercise, viz. friction or unction with oil, before as well as after bathing. The design of this was partly to cleanse the skin from any filth or dust it might have contracted during the exercise, and partly to remove weariness.

APOTOME, in geometry, the difference between two incommensurable lines.

APOTOME, in music, the difference between a greater and lesser semi-tone; expressed by the ratio, 128; 125.

APOTROPÆA, (from *αποτροπω*, *I avert*), in the ancient poetry, verses composed for averting the wrath of incensed deities; and the deities invoked for averting any threatened misfortune were called *Apotrepeans*; they were also called *Alexicaci*, from *αλιξω*, *I drive away*; and *Averrunco* from *averrunco*, which denotes the same.

APOZEM, in medicine, the same with decoction. See **DECOCTION**.

APPARATUS, a term used to denote a complete set of instruments, or other utensils, belonging to any artist or machine.

APPARATUS is frequently used for the operation of cutting for the stone. For this there are three sorts of apparatus, viz. the small, great, and high apparatus. See **SURGERY**.

Apparatus
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Apparition.

APPARATUS is also used as a title of several books composed in form of catalogues, bibliothecas, dictionaries, &c. for the ease and conveniency of study. The apparatus to Cicero is a kind of concordance, or collection of Ciceronian phrases, &c. The apparatus facer of Possevin, is a collection of all kinds of ecclesiastical authors printed in 1611, in three volumes.—Glossaries, comments, &c. are also frequently called *apparatuses*.

APPARENT, in a general sense, something that is visible to the eyes, or obvious to the understanding.

APPARENT, among mathematicians and astronomers, denotes things as they appear to us, in contradistinction from real or true; thus we say, the apparent diameter, distance, magnitude, place, figure, &c. of bodies.

APPARENT Heir, in law. No inheritance can vest, nor can any person be the actual complete heir of another, till the ancestor is previously dead. *Nemo est heres viventis*. Before that time the person who is next in the line of succession is called an *heir apparent*, or *heir presumptive*. Heirs *apparent* are such, whose right of inheritance is indefeasible, provided they outlive the ancestor; as the eldest son or his issue, who must by the course of the common law be heirs to the father whenever he happens to die. Heirs *presumptive* are such, who, if the ancestor should die immediately, would in the present circumstances of things be his heirs: but whose right of inheritance may be defeated by the contingency of some nearer heir being born; as a brother, or nephew, whose presumptive succession may be destroyed by the birth of a child; or daughter, whose present hopes may be hereafter cut off by the birth of a son. Nay, even if the estate hath descended, by the death of the owner, to such brother, or nephew, or daughter, in the former cases, the estate shall be divested and taken away by the birth of a posthumous child; and, in the latter, it shall also be totally divested by the birth of a posthumous son.

APPARITION, in a general sense, denotes simply the appearance of a thing. In a more limited sense, it is used for a spectre or ghost.—Several instances of apparitions occur in the Bible; that of Samuel, raised by the witch of Endor, has occasioned great disputes. We find great controversies among authors, in relation to the reality, the existence or non-existence, the possibility or impossibility, of apparitions. The Chaldeans, the Jews, and other nations, have been the steady asserters of the belief of apparitions. The denial of spirits and apparitions is by some made one of the marks of infidelity, if not of atheism. Many of the apparitions we are told of in writers, are doubtless mere delusions of the sense; many others are fictitious, contrived merely to amuse, or answer some purpose. Apparitions, it is certain, are machines that on occasion have been of good service both to generals, to ministers of state, to priests, and others.

Partial darkness, or obscurity, are the most powerful means by which the sight is deceived: night is therefore the proper season for apparitions. Indeed the state of the mind, at that time, prepares it for the admission of these delusions of the imagination. The fear and caution which must be observed in the night; the opportunity it affords for ambuscades and assassinations; depriving us of society, and cutting off many pleasing trains of ideas, which objects in the light never fail to introduce, are all circumstances of terror: and perhaps,

on the whole, so much of our happiness depends upon our senses, that the deprivation of any one may be attended with proportionable horror and uneasiness. The notions entertained by the ancients respecting the soul, may receive some illustration from these principles. In dark or twilight, the imagination frequently transforms an inanimate body into a human figure; on approaching, the same appearance is not to be found: hence they sometimes fancied they saw their ancestors; but not finding the reality, distinguished these illusions by the name of *shades*.

Many of these fabulous narrations might originate from dreams. There are times of slumber when we are not sensible of being asleep. On this principle, Hobbes has ingeniously accounted for the spectre which is said to have appeared to Brutus. "We read," says he, "of M. Brutus, that at Philippi, the night before he gave battle to Augustus Cæsar, he saw a fearful apparition, which is commonly related by historians as a vision; but, considering the circumstances, one may easily judge it to have been but a short dream. For sitting in his tent, pensive, and troubled with the horror of his rash act, it was not hard for him, slumbering in the cold, to dream of that which most affrighted him; which fear, as by degrees it made him wake, so it must needs make the apparition by degrees to vanish; and having no assurance that he slept, he could have no cause to think it a dream, or any thing but a vision."—The well-known story told by Clarendon, of the apparition of the duke of Buckingham's father, will admit of a similar solution. There was no man in the kingdom so much the subject of conversation as the Duke; and for the corruptness of his character, he was very likely to fall a sacrifice to the enthusiasm of the times. Sir George Villiers is said to have appeared to the man at midnight: therefore there is the greatest probability that the man was asleep; and the dream affrighting him, made a strong impression, and was likely to be repeated.

APPARITOR, among the Romans, a general term to comprehend all attendants of judges and magistrates appointed to receive and execute their orders. *Apparitor*, in England, is a messenger that serves the process of a spiritual court, or a beadle in an university who carries the mace.

APPAUMEE, in heraldry, denotes one hand extended, with the full palm appearing, and the thumb and fingers at full length.

APPEAL, in law, the removal of a cause from an inferior to a superior court or judge, when a person thinks himself aggrieved by the sentence of the inferior judge. Appeals lie from all the ordinary courts of justice to the House of Lords. In ecclesiastical cases, if an appeal is brought before a bishop, it may be removed to the archbishop; if before an archdeacon, to the court of arches, and thence to the archbishop; and from the archbishop's court to the king in chancery.

APPEAL, in common law, denotes an accusation by a private subject against another for some heinous crime; demanding punishment on account of the particular injury suffered, rather than for the offence against the public.

This private process, for the punishment of public crimes, had probably its original in those times, when a private pecuniary satisfaction, called a *weregild*, was constantly

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constantly paid to the party injured, or his relations, to expiate enormous offences. This was a custom derived to the English, in common with other northern nations, from their ancestors the ancient Germans; among whom, according to Tacitus, *lucrum homicidium certo armento- rum ac pecorum numero; recipitque satisfactionem uni- versa domus*. In the same manner, by the Irish Brehon law, in case of murder, the brehon or judge was used to compound between the murderer and the friends of the deceased who prosecuted him, by causing the malefactor to give unto them, or to the child or wife of him that was slain, a recompence which they called an *erlach*. And thus we find in the Anglo-Saxon laws (particularly those of king Athelstan) the several weregilds for homicide established in progressive order, from the death of the ceorl or peasant, up to that of the king himself. And in the laws of Henry I. we have an account of what other offences were redeemable by weregild, and what were not so. As therefore, during the continuance of this custom, a process was certainly given for recovering the weregild by the party to whom it was due; it seems that, when these offences by degrees grew no longer redeemable, the private process was still continued, in order to insure the infliction of punishment upon the offender, though the party injured was allowed no pecuniary compensation for the offence.

But though appeals were thus, in the nature of prosecutions for some atrocious injury, committed more immediately against an individual, yet it also was anciently permitted, that any subject might appeal another subject of high-treason, either in the courts of common law, or in parliament, or (for treasons committed beyond the seas) in the court of the high constable and marshal. The cognizance of appeals in the latter still continues in force; and so late as 1631, there was a trial by battle awarded in the court of chivalry, on such an appeal of treason: but that in the first was *virtually* abolished by the statutes 5 Edw. III. c. 9. and 2 Edw. III. c. 24, and in the second *expressly* by statute 1 Hen. IV. c. 14. So that the only appeals now in force for things done within the realm, are appeals of felony and mayhem.

An appeal of felony may be brought for crimes committed either against the parties themselves or their relations. The crimes against the parties themselves are *larceny, rape, and arson*. And for these, as well as for mayhem, the persons robbed, ravished, maimed, or whose houses are burnt, may institute this private process. The only crime against one's relation, for which an appeal can be brought, is that of *killing* him, by either murder or manslaughter. But this cannot be brought by every relation; but only by the wife for the death of her husband, or by the heir-male for the death of his ancestor; which heirship was also confined by an ordinance of Henry I. to the four nearest degrees of blood. It is given to the wife on account of the loss of her husband; therefore, if she marries again, before or pending her appeal, it is lost and gone; or, if she marries after judgment, she shall not demand execution. The heir, as was said, must also be heir-male, and such a one as was the next heir by the course of the common law at the time of the killing of the ancestor. But this rule has three exceptions: 1. If the person killed leaves an innocent wife, she only, and not the heir, shall have the appeal: 2. If there be no wife, and

the heir be accused of the murder, the person, who next to him would have been heir-male, shall bring the appeal: 3. If the wife kills her husband, the heir may appeal her of the death. And, by the statute of Gloucester, 6 Ed. I. c. 9. all appeals of death must be sued within a year and a day after the completion of the felony by the death of the party: which seems to be only declaratory of the old common law; for in the Gothic constitutions we find the same "*prescriptio annalis, que currit adversus actorem, si de homicida ei non constat intra annum a cade facta, nec quinquam interea arguat et accuset.*"

These appeals may be brought previous to any indictment; and, if the appellee be acquitted thereon, he cannot be afterwards indicted for the same offence. In like manner as by the old Gothic constitution, if any offender gained a verdict in his favour, when prosecuted by the party injured, he was also understood to be acquitted of any crown-prosecution for the same offence: but, on the contrary, if he made his peace with the king, still he might be prosecuted at the suit of the party. And so, in England, if a man be acquitted on an indictment of murder, or found guilty, and pardoned by the king, still he ought not (in strictness) to go at large, but be imprisoned or let to bail till the year and day be past, by virtue of the statute 3 Hen. VIII. c. 1. in order to be forthcoming to answer any appeal for the same felony, not having as yet been punished for it: though, if he hath been found guilty of manslaughter on an indictment, and hath had the benefit of clergy, and suffered the judgment of the law, he cannot afterwards be appealed; for it is a maxim in law, "*that nemo bis punitur pro eodem delicto.*" Before this statute was made, it was not usual to indict a man for homicide within the time limited for appeals; which produced very great inconvenience.

If the appellee be acquitted, the appellor (by virtue of the statute of Westm. 2. 13. Edw. I. c. 12.) shall suffer one year's imprisonment, and pay a fine to the king, besides restitution of damages to the party for the imprisonment and infamy which he has sustained: and, if the appellor be incapable to make restitution, his abettors shall do it for him, and also be liable to imprisonment. This provision, as was foreseen by the author of Fleta, proved a great discouragement to appeals; so that thenceforward they ceased to be in common use.

If the appellee be found guilty, he shall suffer the same judgment, as if he had been convicted by indictment: but with this remarkable difference, that on an indictment, which is at the suit of the king, the king may pardon and remit the execution; on an appeal, which is at the suit of a private subject, to make an atonement for the private wrong, the king can no more pardon it, than he can remit the damages recovered on an action of battery. In like manner as, while the weregild continued to be paid as a fine for homicide, it could not be remitted by the king's authority. And the ancient usage was, so late as Henry IV.'s time, that all the relations of the slain should drag the appellee to the place of execution: a custom, founded upon that savage spirit of family-resentment which prevailed universally through Europe after the irruption of the northern nations, and is peculiarly attended to in their several codes of law; and which prevails even now among the

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the wild and untutored inhabitants of America: as if the finger of nature had pointed it out to mankind, in their rude and uncultivated state. However, the punishment of the offender may be remitted and discharged by the concurrence of all parties interested; and as the king by his pardon may frustrate an indictment, so the appellant by his release may discharge an appeal: "*nam quilibet potest renunciare juri pro se introducto.*"

APPEARANCE, in a general sense, the exterior surface of a thing, or that which immediately strikes the senses.

APPEARANCE, in law, signifies a defendant's filing a common or special bail, on any process issued out of a court of judicature.

APPELLANT, in a general sense, one who appeals. See APPEAL.

APPELLANTS, in church history, an appellation given to such of the catholic clergy as appeal from the constitution unigenitus to a general council.

APPELLATION, the name by which any thing is known or distinguished when spoken of. See NAME.

Nothing can be more foreign to the original meaning of many words and proper names, than their present appellations, frequently owing to the history of those things being forgotten, or an ignorance of the language in which they were expressed. Who, for example, when the crier of a court bawls out, "O yes, O yes," would dream that it was a proclamation commanding the talkers to become hearers, being the French word *Oyez*, "listen," retained in our courts ever since the pleadings were held in law French? Or would any person suppose that the head-land on the French coast, near Calais, called by our seamen Blackness, could be so titled from its French name of *Blanc Nez*, or, the *White Head-land*?

King Henry the Eighth having taken the town of Bullogne in France, the gates of which he brought to Hardes in Kent, where they are still remaining, the flatterers of that reign highly magnified this action, which, Porto Bello like, became a popular subject for signs; and the port or harbour of Bullogne, called *Bullogne mouth*, was accordingly set up at a noted inn in Holburn; the name of the inn long out-living the sign and fame of the conquest, an ignorant painter employed by a no less ignorant landlord, to paint a new one, represented it by a bull and a large gaping human mouth (answering to the vulgar pronunciation of *Bull and Mouth*). The same piece of history gave being to the *bull and gate*, originally meant for Bullogne gate, and represented by an embattled gate or entrance into a fortified town.

The *barber's pole* has been the subject of many conjectures; some conceiving it to have originated from the word *poll*, or head, with several other conceits as far-fetched and as unmeaning: but the true intention of that party-coloured staff was to show that the master of the shop practised surgery, and could breathe a vein as well as mow a beard; such a staff being to this day, by every village-practitioner, put into the hand of a patient undergoing the operation of phlebotomy. The white band which encompasses the staff, was meant to represent the fillet, thus elegantly twined about it.

Nor were the *Chequers* (at this time a common sign of a public-house) less expressive, being the representation of a kind of draught-board called *tables*, and

showed that there that game might be played. From their colour which was red, and the similarity to a lattice, it was corruptly called the *red lettuce*, which word is frequently used by ancient writers to signify an alehouse.

The Spectator has explained the sign of the *bell savage inn* plausibly enough, in supposing it to have been originally the figure of a beautiful female found in the woods, called in French *la belle sauvage*. But another reason has since been assigned for that appellation, namely, that the inn was once the property of Lady Arabella Savage, and familiarly called *Bell Savage's inn*, probably represented, as at present, by a bell and a savage or wild man, which was a rebus for her name; rebuses being much in fashion in the 16th century, of which the bolt and tun is an instance.

The *three blue balls* prefixed to the doors and windows of pawn-brokers shops, by the vulgar humorously enough said to indicate that it is two to one that the things pledged are ever redeemed, was in reality the arms of a set of merchants from Lombardy, who were the first that publicly lent money on pledges. They dwelt together in a street, from them named *Lombard-street* in London, and also gave their name to another at Paris. The appellation of Lombard was formerly all over Europe considered as synonymous to that of usurer.

At the institution of yeomen of the guards, they used to wait at table on all great solemnities, and were ranged near the buffets; this procured them the name of *buffetiers*, not very unlike in sound to the jocular appellation of *beef-eaters*, now given them; though probably it was rather the voluntary misnomer of some wicked wit, than an accidental corruption arising from ignorance of the French language.

The opprobrious title of *bum-bayliffe*, so constantly bestowed on the sheriffs officers, is, according to Judge Blackstone, only the corruption of *bound bayliffe*, every sheriff's officer being obliged to enter into bonds and to give security for his good behaviour, previous to his appointment.

A *cordwainer* seems to have no relation to the occupation it is meant to express, which is that of a shoemaker. But *cordonnier*, originally spelt *cordaunier*, is the French word for that trade; the best leather used for shoes coming originally from Cordua in Spain. Spanish-leather shoes were once famous in England.

APPELLATIVE NAMES, in grammar, in contradistinction to proper names, are such as stand for universal ideas, or a whole rank of beings, whether general or special. Thus fish, bird, man, city, river, are common or appellative names; and so are trout, eel, lobster; for they all agree to many individuals, and some to many species. See NAME.

APPELLEE, among lawyers, the person against whom an appeal is brought. See APPEAL.

APPENDIX, in literature, a treatise or supplement added at the end of a work, to render it more complete.

APPERCEPTION or ADPERCEPTION, a term used by Leibnitz and his followers for consciousness.

APPETITE, in a general sense, the desire of enjoying some object, supposed to be conducive to our happiness. When this inclination is guided by reason, and proportioned to the intrinsic value of the object, it is called *rational appetite*; as, on the other hand, it is

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Appetite || **Appause.** denominated *sensitive appetite*, when we have only a blind propensity to a thing, without determinate ideas of the good qualities for which we desire it.

Appetites are passions directed to general objects, in contradistinction to passions directed to particular objects, which retain their proper name. Thus we say, an *appetite* for fame, for glory, for conquest, for riches; but we say the *passion* of love, of gratitude, of envy, &c. Appetite may be also distinguished from passion, since the latter has no existence till a proper object be presented: whereas the former exists first, and then is directed to an object.

APPETITE, in medicine, a certain painful or uneasy sensation, always accompanied with a desire to eat or drink.—An excessive appetite is called by physicians *bulimy* or *fames canina*; a defect or loss of it, *anorexy*; and that after things improper for food, *pica*.

APPIA VIA, a way reaching from Rome through Capua to Brundisium, between 330 and 350 miles long. Appius Claudius, surnamed *Cæcus*, in the year of the city 441, carried it from the Porta Capena to Capua (Livy, Frontinus). It was afterwards carried on to Brundisium; but by whom, or when, is uncertain. It was laid with very hard stone, brought from a great distance, large and squared (Diodorus); and it was so wide, that several waggons could go abreast. Statius calls it *the queen of roads*. Its course is described by Horace, Strabo, and Antonine.

APPIAN, an eminent writer of the Roman history in Greek, under the reign of Trajan and Hadrian. He was of a good family in Alexandria in Egypt; whence he went to Rome; and there distinguished himself so well as an advocate, that he was chosen one of the procurators of the empire, and the government of a province was committed to him. He did not complete the Roman history in a continued series; but wrote distinct histories of all nations that had been conquered by the Romans, in which he placed every thing relating to those nations in the proper order of time. His style is plain and simple: in the opinion of Phocius, he has shown the greatest knowledge of military affairs, and the happiest talent at describing them, of any of the historians; for while we read him, we in a manner see the battles which he describes. Of all this voluminous work there remains only what treats of the Punic, Syrian, Parthian, Mithridatic, and Spanish wars, with those against Hannibal, the civil wars, and the wars in Illyricum, and some fragments of the Celtic or Gallic wars.

APPIUS CLAUDIUS, a Sabine by birth, one of the principal inhabitants of Regillum: His shining merit having drawn the envy of his fellow-citizens upon him, he retired to Rome with all his family. Appius was admitted into the senate, and was made consul, with Publius Servilius Priscus, in 258 from the building of Rome: but he was hated by the Plebeians, being an austere opposer of their clamours and seditions. The Claudian family continued long one of the most illustrious of the patrician families in Rome; and several in succession of the name of Appius supported the same stern character that distinguished their first founder.

APPLAUSE, an approbation of something, signified by clapping the hands, still practised in theatres.

—Applause, in antiquity, differed from **ACCLAMATION**, as the latter was articulate and performed with the voice, the former with the hands. Among the Ro-

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mans, applause was an artificial musical kind of noise, made by the audience or spectators to express their satisfaction. There were three species of applause, denominated from the different noises made in them, viz. *Bombus*, *Imbrices*, and *Testæ*; the first a confused din, made either by the hands or the mouth; the second and third, by beating on a sort of sounding vessels placed in the theatres for this purpose. Persons were instructed to give applause with skill; and there were even masters who professed to teach the art. The proficients in this way let themselves out for hire to the vain-glorious among the poets, actors, &c. and were properly disposed to support a loud applause. These they called *Laudicæni*, and *Σφοδραῖς*. At the end of the play, a loud peal of applause was expected, and even asked of the audience, either by the chorus or the person who spoke last. The formula was, *Spectatores plaudite*, or *Valete et plaudite*. The *plausores*, or applauders, were divided into chori, and disposed in theatres opposite to each other, like the choristers in cathedrals, so that there was a kind of concert of applauses.

APPLE, the fruit of the *pyrus malus*. See **PYRUS**.

APPLE of the eye, a name not unfrequently given to the pupil. See **ANATOMY**.

APPLES of Love. See **LYCOPERSICON**.

Mad APPLES. See **MELONGENA**.

APPLEBY, the county-town of Westmoreland, where the assizes are held, is seated on the banks of the river Eden, which almost surrounds it. It was formerly a very considerable town, and had great privileges; but it is long ago gone to decay, and now only consists of mean houses in one broad street, which runs with an easy ascent from north to south; at the head of which is the castle, almost entirely surrounded by the river. It has two churches; a town-hall, in which the assizes are held; a county jail; and an hospital for a governess and twelve widows, founded in 1651 by a daughter of Lord Clifford. It is governed by a mayor, twelve aldermen, a common council, and two sergeants at mace, &c. Here is said to be the best corn-market in these northern parts. It sends two members to parliament. W. Long. 3. 52. N. Lat. 54. 30.

APPLICATION, in a general sense, is the laying two things together, in order to discover their agreement or disagreement.

APPLICATION, in geometry, is used either for division, for applying one quantity to another, whose areas, but not figure, shall be the same; or, for transferring a given line into a circle, or other figure, so that its ends shall be in the perimeter of the figure.

APPLICATION, in theology, is particularly used, by some divines, for the act whereby our Saviour transfers, or makes over to us, what he had earned or purchased by his holy life and death. Accordingly it is by this application of the merits of Christ that we are to be justified, and intitled to grace and glory. The sacraments are the ordinary means or instruments whereby this application is effected.

APPOGIATURA, in music, a small note inserted by the practical musician, between two others, at some distance.

APPOINTEE, a foot soldier in the French army, &c. who for his long service and bravery receives pay above private sentinels. These have been suppressed in

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France, except in the regiment of French guards, where forty appointees are still retained to each company of 150 men.

Till the year 1670, they had also captains and lieutenants under the appellation of *appointees*, who, without residing in the regiment, received their pay.

APPOINTEE, in heraldry, the same as *aguifée*: Thus we say, a cross appointée, to signify that with two angles at the end cut off, so as terminate in points.

APPOINTMENT, in a general sense, the same as ASSIGNATION.

APPOINTMENT, in a particular sense, denotes a pension or salary given by great lords and princes to persons of worth and parts, in order to retain them in their service. The term is chiefly used among the French. The king of France gives large appointments to several of the officers in his service. Appointments differ from wages, in that the latter are fixed and ordinary, being paid by the ordinary treasurers; whereas appointments are annual gratifications granted by *breve* for a time uncertain, and are paid out of the privy purse.

APPOSER signifies an examiner. In the court of exchequer, there is an officer called the *foreign apposer*. In the office of confirmation, in the first liturgy of Edward VI. the rubric directs the bishop, or such as he shall appoint, to appose a child; and a bishop's examining chaplain was anciently called his *poser*.

APPOSITION, in grammar, the placing two or more substantives together, in the same case, without any copulative conjunction between them; as, *Ardebat Alexim, delicias domini*.

APPRAISER (from *ad*, "to," and *pretium*, "value"), one who rates or sets a value upon goods, &c. He must be a skilful and honest person. It is not a business of itself, but is practised by brokers of household-furniture; to which set of men the word is chiefly applied: Yet upholsterers and other brokers are employed, or even any person or persons who are supposed to be skilled in the commodities to be appraised or valued. They are employed in cases of death, executions brought in upon goods, or of stock to be turned over from one person to another, or divided between co-partners; and are called *sworn appraisers*, from their taking an oath to do justice between party and party. They sometimes appraise on behalf of both sides, each party agreeing to have the same appraiser or appraisers; sometimes in opposition, each party choosing one or more of a side; and sometimes by commission or deputation of trustees, masters in chancery, &c.

APPRAISING, the act of rating, valuing, or setting a price on goods, by a person who is a competent judge, and is authorized thereto. See APPRAISER.

APPREHENSION, in logic, denotes the simple attention of the mind to an object presented either to our sense or our imagination, without passing a judgement or making any inference.

APPREHENSION, is likewise used to express an inadequate and imperfect idea; and thus it is applied to our knowledge of God, in contradistinction to comprehension.

APPREHENSION, in law, signifies the seizing a criminal, in orders to bring him to justice.

APPRENTICE, (from *apprendre*, "to learn,") one who is bound by covenant to serve a tradesman or ar-

tificer a certain time, upon condition of the master's instructing him in his art or mystery.

Apprentices may likewise be bound to husbandmen, or even to gentlemen; and they, as well as tradesmen, in England, are compellable to take the children of the poor, whom the overseers, with the consent of two justices, may bind till the age of twenty-four years. Apprentices may be discharged on reasonable cause; but if any, whose premium has been less than ten pounds, run away from their masters, they are compellable to serve out the time of absence, or give satisfaction for it, at any period within seven years after expiration of the original contract. Apprentices gain a settlement in that parish where they last served forty days; and by the 5th of Elizabeth, c. 4. they have an exclusive right to exercise the trade in which they have been instructed, in any part of England. However, the resolutions of the courts have in general rather confined than extended the restriction of this statute. See Blackstone's Com. Vol. I. p. 426, &c.

In France, the sons of tradesmen, living in their father's house till seventeen years of age, are reputed to have served an apprenticeship. In that country, the times of serving are different in the different professions, from three years to eight. After serving out an apprenticeship, the person becomes what they call an *aspirant*, or candidate for mastership, and is to be examined by proper officers as to his skill and proficiency, and also to exhibit a *chef d'œuvre* or masterpiece in the art he has been bred to, before he be suffered to set up to practise for himself. And the custom of France in regard to apprentices, is not unworthy the imitation of other nations.

Anciently, benchers in the inns of court were called *apprentices of the law*, in Latin *apprenticii juris nobiliores*; as appears by Mr Selden's note on Fortescue: and so the learned Plowden styles himself. Sir Henry Finch, in his *Nomotechnia*, writes himself, *apprentice de ley*: Sir Edward Coke in his *Inst.* says, *Apprenticii legis*, in pleading, are called *homines consiliarii et in lege periti*; and in another place, *apprentices* and other counsellors of law.

Apprentices indentures and articles of clerkship, pay of duty six shillings. Parish indentures are excepted, and pay sixpence only, by 5 W. 3. c. 21. For fees given with apprentices, clerks, or servants, bound or articulated by indentures, from 1 l. to 50 l. masters pay for every pound sixpence; and for fees above 50 l. one shilling in the pound. 8. Ann. c. 9.

APPRENTICESHIP, the servitude of an apprentice or the duration of his indenture.

Seven years seem anciently to have been, all over Europe, the usual term established for the duration of apprenticeships in the greater part of incorporated trades. All such incorporations were anciently called *universities*; which, indeed, is the proper Latin name for any incorporation whatever. The university of smiths, the university of taylors, &c. are expressions which we commonly meet with in the old charters of ancient towns. When those particular incorporations which are now peculiarly called *universities* were first established, the term of years which it was necessary to study, in order to obtain the degree of master of arts, appears evidently to have been copied from the term of apprenticeship in common trades, of which the incorporations

Appren-
ticeship.

Apprenticeship.

porations were much more ancient. As to have wrought seven years under a master properly qualified was necessary in order to intitle any person to become a master, and to have himself apprentices in a common trade; so to have studied seven years under a master properly qualified was necessary to intitle him to become a master, teacher, or doctor (words anciently synonymous), in the liberal arts, and to have scholars or apprentices (words likewise originally synonymous) to study under him.

By the 5th of Elizabeth, commonly called the *statute of apprenticeship*, it was enacted, that no person should for the future exercise any trade, craft, or mystery at that time exercised in England, unless he had previously served to it an apprenticeship of seven years at least; and what before had been the bye-law of many particular corporations, became in England the general and public law of all trades carried on in market-towns. For though the words of the statute are very general, and seem plainly to include the whole kingdom, by interpretation its operation has been limited to market-towns; it having been held, that in country villages a person may exercise several different trades, though he has not served a seven years apprenticeship to each, they being necessary for the convenience of the inhabitants, and the number of people frequently not being sufficient to supply each with a particular set of hands.

By a strict interpretation of the words, too, the operation of this statute has been limited to those trades which were established in England before the 5th of Elizabeth, and has never been extended to such as have been introduced since that time. This limitation has given occasion to several distinctions which, considered as rules of police, appear as foolish as can well be imagined. It has been adjudged, for example, that a coachmaker can neither himself make, nor employ journeymen to make, his coach-wheels, but must buy them of a master wheelwright, this latter trade having been exercised in England before the 5th of Elizabeth. But a wheelwright, though he has never served an apprenticeship to a coachmaker, may either himself make, or employ journeymen to make, coaches; the trade of a coachmaker not being within the statute, because not exercised in England at the time when it was made. The manufacturers of Manchester, Birmingham, and Wolverhampton, are many of them upon this account not within the statute; not having been exercised in England before the 5th of Elizabeth.

In France, the duration of apprenticeships is different in different towns and in different trades. In Paris, five years is the term required in a great number; but before any person can be qualified to exercise the trade as a master, he must, in many of them, serve five years more as a journeyman. During this latter term he is called the *companion* of his master, and the term itself is called his *companionship*.

In Scotland there is no general law which regulates universally the duration of apprenticeships. The term is different in different corporations. Where it is long, a part of it may generally be redeemed by paying a small fine. In most towns, too, a very small fine is sufficient to purchase the freedom of any corporation. The weavers of linen and hempen cloth, the principal manufactures of the country, as well as all other arti-

ficers subservient to them, wheelmakers, reelmakers, &c. may exercise their trades in any town corporate without paying any fine. In all towns corporate, all persons are free to sell butcher's meat upon any lawful day of the week. Three years is in Scotland a common term of apprenticeship, even in some very nice trades; and in general there is no country in Europe in which corporation laws are so little oppressive.

Apprenticeships were altogether unknown to the ancients. The reciprocal duties of master and apprentice make a considerable article in every modern code. The Roman law is perfectly silent with regard to them. There is no Greek or Latin word which expresses the idea we now annex to the word apprentice; a servant bound to work at a particular trade for the benefit of a master during a term of years, upon condition that the master shall teach him that trade.

Long apprenticeships Dr Smith considers as altogether unnecessary. The arts, which are much superior to common trades, such as those of making clocks and watches, contain no such mystery as to require a long course of instruction. The first invention of such beautiful machines, indeed, and even that of some of the instruments employed in making them, must, no doubt, have been the work of deep thought and long time, and may justly be considered as among the happiest efforts of human ingenuity: But when both have been fairly invented and are well understood; to explain to any young man, in the completest manner, how to apply the instruments and how to construct the machines, cannot well require more than the lessons of a few weeks; perhaps those of a few days might be sufficient. In the common mechanic trades, those of a few days might certainly be sufficient. The dexterity of hand, indeed, even in common trades, cannot be acquired without much practice and experience. But a young man would practise with much more diligence and attention, if from the beginning he wrought as a journeyman, being paid in proportion to the little work which he could execute, and paying in his turn for the materials which he might sometimes spoil through awkwardness and inexperience. His education in this way generally would be more effectual, and always less tedious and expensive. The master, indeed, would be a loser; he would lose all the wages of the apprentice, which he now saves, for seven years together. In the end, perhaps, the apprentice himself would be a loser. In a trade so easily learnt he would have more competitors; and his wages, when he came to be a complete workman, would be much less than at present. The same increase of competition would reduce the profits of the masters as well as the wages of the workmen. The trades, the crafts, the mysteries, would all be losers; but the public would be a gainer; the work of all artificers coming in this way much cheaper to market.

APPRIISING, in Scots law, the name of that action by which a creditor formerly carried off the estate of his debtor for payment. It is now abolished, and adjudications are appointed in place of it.—Adjudications, charter, resignation, clare constat, cognition of heirs, heritable right, confirmation, novodamus, principal and original instrument of surrender, retour, seisin, and service, in Scotland, pay by different acts 4s. 9d. duty.

Apprenticeship. Apprising.

Wealth of Nations, vol. 1. p. 190.

Approach
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Appropriation.

APPROACH, or **APPROACHING**, in a general sense, the acceding or coming together of two or more things.

APPROACHES, in fortification, the works thrown up by the besiegers, in order to get nearer a fortress, without being exposed to the enemy's cannon.

APPROACHING, in fowling, a term used to express such devices as are contrived for the getting within shot of shy birds. It is principally used in marshy low places. The best method of approaching is by means of three hoops tied together at proper distances according to the height of the man that is to use it, and having boughs of trees tied all round it, with cords to hang it over his shoulders; a man getting into this, conceals himself, and approaches by degrees towards his game in the form of a moving bush. Geese, ducks, and teal, quit the waters in the evening, and pass the night in the fields; but at the approach of morning they return to the water again, and even when on the water they will retire to great distances, on the approach even of a horse or cow, so that the business of the stalking-horse is of little use; but this device of approaching by the moving bush succeeds tolerably well with them.

APPROACHING, in gardening, the inoculating or ingrafting the sprig of one tree into another, without cutting it off the parent tree.

APPROBATION, a state or disposition of the mind, wherein we put a value upon, or become pleased with, some person or thing. Moralists are divided on the principle of approbation or the motive which determines us to approve and disapprove. The Epicureans will have it to be only self-interest: according to them, that which determines any agent to approve his own action, is its apparent tendency to his private happiness; and even the approbation of another's action flows from no other cause but an opinion of its tendency to the happiness of the approver, either immediately or remotely. Others resolve approbation into a moral sense, or a principle of benevolence by which we are determined to approve every kind affection either in ourselves or others, and all publicly useful actions, which we imagine to flow from such affection, without any view therein to our own private happiness.

APPROBATION, is more particularly used, in speaking of recommendations of books, given by persons qualified or authorised to judge of them. Those appointed to grant licences and imprimatures, frequently express their approbations of books. Books were formerly subjected to a licenser in England (see 13th Car. II. c. 33.), which act is long since expired; and being incompatible with the noble principles of the Revolution, has never since been, and it is hoped never will be, revived.

APPROPRIATION, in the canon law, a severing of a benefice ecclesiastical to the proper and perpetual use of some religious house. See the article **PARSON**.

The contrivance of appropriations seems to have sprung from the policy of the monastic orders, who have never been deficient in subtle inventions for the increase of their own power and emoluments. At the first establishment of parochial clergy, the tithes of the parish were distributed in a fourfold division; one for the use of the bishop, another for main-

taining the fabric of the church, a third for the poor, and the fourth to provide for the incumbent. When the sees of the bishops became otherwise amply endowed, they were prohibited from demanding their usual share of these tithes, and the division was into three parts only. And hence it was inferred by the monasteries, that a small part was sufficient for the officiating priest; and that the remainder might well be applied to the use of their own fraternities (the endowment of which was construed to be a work of the most exalted piety), subject to the burden of repairing the church and providing for its constant supply. And therefore they begged and bought, for masses and obits, and sometimes even for money, all the advowsons within their reach, and then appropriated the benefices to the use of their own corporation. But, in order to complete such appropriation effectually, the king's licence, and consent of the bishop, must first be obtained; because both the king and the bishop may some time or other have an interest, by lapse, in the presentation to the benefice; which can never happen if it be appropriated to the use of a corporation, which never dies: and also because the law reposes a confidence in them, that they will not consent to any thing that shall be to the prejudice of the church. The consent of the patron also is necessarily implied, because the appropriation can be originally made to none but to such spiritual corporation as is also the patron of the church; the whole being indeed nothing else but an allowance for the patrons to retain the tithes and glebe in their own hands, without presenting any clerk, they themselves undertaking to provide for the service of the church. When the appropriation is thus made, the appropriators and their successors are perpetual parsons of the church; and must sue and be sued, in all matters concerning the rights of the church by the name of *parsons*.

This appropriation may be severed, and the church become disappropriate, two ways; as, first, if the patron or appropriator presents a clerk, who is instituted and inducted to the parsonage: or the incumbent so instituted and inducted is to all intents and purposes complete parson; and the appropriation being once severed, can never be reunited again, unless by a repetition of the same solemnities. And, when the clerk so presented is distinct from the vicar, the rectory thus vested in him becomes what is called a *sine-cure*; because he hath no cure of souls, having a vicar under him to whom that cure is committed. Also, if the corporation which has the appropriation is dissolved, the parsonage becomes disappropriate at common law: because the perpetuity of person is gone, which is necessary to support the appropriation.

In this manner, and subject to these conditions, may appropriations be made at this day: and thus were most if not all of the appropriations at present existing originally made; being annexed to bishopricks, prebends, religious houses, nay, even to nunneries, and certain military orders, all of which were spiritual corporations. At the dissolution of monasteries, by statutes 27 Hen. VIII. c. 28. and 31 Hen. VIII. c. 13. the appropriations of several parsonages, which belonged to those respective religious houses (amounting to more than one third of all the parishes in England), would have been by the rules of the common law disappropriated;

Appropriation.

Approver
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Apries.

priated; had not a clause in those statutes intervened, to give them to the king in as ample a manner as the abbots, &c. formerly held the same at the time of their dissolution. This, though perhaps scarcely defensible, was not without example: for the same was done in former reigns, when the alien priories (that is, such as were filled by foreigners only) were dissolved and given to the crown. And from these two roots have sprung all the lay-appropriations or secular parsonages which we now see in the kingdom; they having been afterwards granted out from time to time by the crown. See the article *PARSON and Vicar*.

APPROVER, in law, one who, confessing felony in himself, appealeth or impeacheth another or more of his accomplices. He is so called from the French *aprouver, comprobare*, because he must prove what he hath alleged in his appeal. This proof was anciently either by battle, or by the country, at the choice of the appellee: and the form of this accusation may be found in *Crompt. Just.* 250.

APPROVERS of the king are those who have the letting of the king's demesnes in small manors, &c. In the statute of the 1st of Ed. III. c. 8. sheriffs are called the king's *approvers*.

It being in the discretion of the court to suffer one to be an approver, this method of law hath seldom been practised. But we have in cases of burglary and robbery on the highway, what seems to amount to the same by statute; it being ordained, that where persons charged with such crimes out of prison, discover two others concerned in the crime, they shall have a pardon, &c. Stat. 5th Anne. c. 31.

APPROVER is particularly used in ancient law writers, for a bailiff or land-steward, appointed to have the care of a manor, franchise, or the like, and improve and make the most of it for the benefit of his master. In this sense, the word is also written *appruare*.

APPROXIMATION, in arithmetic and algebra, the coming nearer and nearer to a root, or other quantity sought, without expecting to be ever able to find it exactly.

APPUI, in the manege, (*q. d.* rest or stay upon the hand), is the reciprocal effort between the horse's mouth and the bridle-hand, or the sense of the action of the bridle on the hand of the horseman.

A just appui of the hand, is the nice bearing up or stay of the bridle, so that the horse, being awed by the sensibility and tenderness of his mouth, dares not rest too much upon the bit-mouth, nor check or beat upon the hand to withstand it. A horse is said to have no appui, when he is too apprehensive of the hand, and cannot bear the bit. He is said to have too much appui, when he rests or throws himself too much upon the bit. Horses designed for the army ought to have a full appui upon the hand. To give a horse a good appui, he should be galloped, and put often back.

APPULSE, in astronomy, the approach of any planet to a conjunction with the sun, or a star. It is a step towards a transit, occultation, conjunction, eclipse, &c. M. Flamsteed, M. de la Hire, and others, have given observations of the moon's appulses to the pleiades. *Phil. Trans.* N^o 76. p. 361. *M. Acad. Science. an.* 1708.

APRICOT, in botany. See *PRUNUS*.

APRIES, son of Psammis, king of Egypt; the

same with Pharaoh Hophrah in Jeremiah and Ezekiel. He ruined Sidon, and some say he put Jeremiah to death. He thought neither God nor man could dethrone him; which yet was easily done by Amasis, and he himself was strangled by the Egyptians.

APRIL, the fourth month of the year, according to the common computation; but the second, according to that of the astronomers. It contains 30 days.—The word is derived from *aprilis* of *aperio*, "I open;" because the earth, in this month, begins to open her bosom for the production of vegetables. In this month the sun travels through the sign Taurus.

APRIORI, a kind of demonstration. See *DEMONSTRATION*.

APRON, in naval architecture, is a piece of curved timber fixed behind the lower part of the stern, immediately above the foremost end of the keel.

APRON is also a name given to a platform or flooring of plank, raised at the entrance of a dock, against which the dock-gates are shut.

APRON, in gunnery, a piece of lead which caps or covers the vent or touch-hole of a great gun.

AP SIS or **ABSIS**, signifies the bowed or arched roof of a house, room, or oven, &c. as also the ring or compass of a wheel.

AP SIS in ecclesiastical writers, denotes an inner part in the ancient churches, wherein the clergy sat, and where the altar was placed. It is supposed to have been thus called, because covered with an arch or vault of its own, by the Greeks called *αψις*, by the Latins *absis*. *Apsis*, in this sense, amounts to the same with what is otherwise called *choir, concha, camera*, and *presbyterian*; and stands opposite to the *nave* or body of the church.

AP SIS is more particularly used for the bishop's seat, or throne, in ancient churches. This was peculiarly called *apsis gradata*, because raised on steps above the ordinary stalls.—It was also denominated *exedra*, and in latter times *tribune*.

AP SIS is also used for a reliquary, or case, wherein the relics of saints were anciently kept. It took the name *apsis*, from its being round, or arched at the top; or perhaps from the place where it was kept. The *apsis* was commonly placed on the altar: it was usually of wood, sometimes also of gold and silver, with sculptures, &c.

AP SIS, in astronomy, a term used indifferently for either of the two points of a planet's orbit, where it is at greatest or least distance from the sun or earth; and hence the line connecting those points is called the line of the *apsides*. The word is Greek, and derived from *απτεω*, to connect. The *apsis* at the greatest distance from the sun is called the *aphelion*, and at the greatest distance from the earth the *apogee*; while that at the least distance from the sun is termed the *perihelion*, and at the least distance from the earth the *perigee*.

APSIRTIDES. See *ABSORUS*.

APTA, or **APTA JULIA**, (Pliny); now *Apte*, in Provence, on the river Calavon, seven leagues to the north of Aix, and nine to the north of Avignon. In the Notitiz it is called *Civitas Abtensum*: Pliny reckons it among the Latin towns. That it was a colony, appears from an inscription on a stone found at Arles, (Sirmond). E. Long. 5. 56. Lat. 43. 23.

AP-

April
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Apta.

Aptera,
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Apuleius.

APTERA, (Strabo, Stephanus); APTERON, (Pliny); APTERIA, (Ptolemy): An inland town of Crete, whose port was Cifamus, on the west side of the island, (Strabo); 12 miles to the south of Sydonia towards the Montes Leuci, and as many from the Sinus Amphimales. So called from the Sirens, who, being there vanquished in song by the Muses, stript themselves of their wings, and out of grief leaped into the sea, (Stephanus). There was a town of Lycia of the same name. E. Long. 25. Lat. 35. 50.

APTERA, a term used by Linnæus for his seventh order of insects, comprehending such as have no wings.

APTHANE, a title anciently given to the higher degrees of nobility in Scotland. See THANE.

APTITUDE, from *aptus* "fit"), the natural disposition any thing hath to serve for such or such a purpose.—Thus, oil hath an *aptitude* to burn, and water to extinguish fire.

APTITUDE, or APTNESS, is often used, in speaking of the talents of the mind, for a promptitude, or disposition to learn things with ease and expedition. In which sense *aptness* amounts to the same with what the Greeks call *ευμαθια*, *bona indoles*, and we sometimes *docility*. Charlton divides *aptness* into these parts, viz. *acuteness*, *sagacity*, and *memory*.

APTOTE, among grammarians, an undeclinable noun, or one which has no variation of cases.

APULEIUS (Lucius), a Platonic philosopher, universally known by his performance of the Golden Ass. He lived in the second century, under the Antonines; and was born at Madaura, a Roman colony in Africa. He studied first at Carthage, then at Athens, and afterwards at Rome, where he learned the Latin tongue without the help of a master. He was a man of curious and inquisitive disposition, especially in religious matters: this prompted him to take several journeys, and to enter into several societies of religion. He spent his whole fortune almost in travelling; so that, at his return to Rome, when he was about to dedicate himself to the service of Osiris, he had not money enough to defray the expence attending the ceremonies of the reception, and was obliged to pawn his clothes to raise the necessary sum. He supported himself afterwards by pleading causes: and as he was a great master of eloquence, and of a subtle genius, many considerable causes were trusted to him. But he availed himself more by a good marriage than by his pleadings: a widow, named *Pudentilla*, who was neither young nor handsome, but wanted a husband and was very rich, took a great fancy to him. This marriage drew upon him a troublesome law-suit. The lady's relations, pretending he made use of sorcery to gain her heart and money, accused him of being a magician before Claudius Maximus proconsul of Africa. Apuleius was under no great difficulty of making his defence. As Pudentilla was determined from considerations of health, to enter upon a second marriage, even before she had seen this pretended magician, the youth, deportment, pleasing conversation, vivacity, and other agreeable qualities of Apuleius, were charms sufficient to engage her heart. He had the most favourable opportunities too of gaining her friendship, for he lodged some time at her house; Pudentilla's eldest son having a great friendship for him, was likewise desirous

of the match, and solicited him in favour of Pudentilla. "Do you make a wonder (said Apuleius, in his defence) that a woman should marry again, after having lived a widow 13 years? it is much more wonderful that she did not marry again sooner. You think that magic must have been employed to prevail with a widow of her age, to marry a young man; on the contrary, this very circumstance shows how little occasion there was for magic." He offered to prove by his marriage-contract, that he got nothing of Pudentilla but a promise of a very moderate sum, in case he survived her and had children by her. He was also obliged to make such confessions in court as Pudentilla would gladly have excused. He said she was neither handsome nor young, nor such as could any ways tempt him to have recourse to enchantments: moreover, he added, that Pontianus her son proposed the marrying his mother to him only as a burden, and the action of a friend and philosopher. He also took notice of many inconveniences which attend the marrying of widows, and spoke highly of the advantages of a maid above a widow: A handsome virgin (said he), let her be ever so poor, is abundantly portioned; she brings to her husband a heart quite new, together with the flower and first-fruits of her beauty. It is with great reason that all husbands set so great a value upon the flower of virginity: all the other goods which a woman brings her husband are of such a nature, that he may return them again, if he has a mind to be under no obligation to her: that alone cannot be restored, it remains in the possession of the first husband. If you marry a widow, and she leaves you, she carries away all that she brought you." Upon which passage Mr Bayle makes a very coarse remark, viz. "That this good which is never taken back out of the hands of a husband, is very chimerical; and that there is never a baker nor a butcher, who would lend sixpence upon this unperishable possession." The apology is still extant, and is reckoned a very fine piece. Apuleius was extremely indefatigable in his studies; and composed several books, some in verse, and others in prose; but most of them have been lost. He took great pleasure in declaiming, and was heard generally with great applause: When he declaimed at Oeca, the audience cried out with one voice, that they ought to confer upon him the honour of citizen. The citizens of Carthage heard him with great satisfaction, and erected a statue to him; and several other cities did him the same honour. Several critics have published notes on Apuleius's Golden Ass, and there have been translations of it into different languages.

APULIA, now PUGLIA, a territory of Italy, bordering on the Adriatic, and extending from the river Frento to Tarentum in length, and from the Adriatic to the Lucani in breadth. *Apuli* the people, (Horace); divided into the *Apulia Daunia*, now called *Puglia Pinna*, or the *Capitanata*; and into the *Apulia Paucetia*, now *Terra di Barri*, (Pliny, Ptolemy). Apulia abounded in sheep, which yielded the finest wool, (Martial). It is now the east side of the kingdom of Naples.

APUS, *Avis Indica*, in astronomy, a constellation of the southern hemisphere placed near the pole, between the triangulum australe and the chameleon, supposed to represent the bird of paradise.

Apuleius
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Apus.

Apycni

Aqua.

APYCNISUONI, in music, sounds distant one or more octaves, and yet concord.

APYCNOS, in music, is said of the diatonic genus, on account of its having spacious intervals, in comparison of the chromatic and enharmonic.

APYREXY, among physicians, denotes the intermission of a fever.

APYROUS, a word applied to denote that property of some bodies, by which they resist the most violent fire without any sensible alteration. Apyrous bodies ought to be distinguished from those which are refractory. Refractory substances are those which cannot by violent heat be fused, whatever other alteration they may sustain. But a body, properly speaking, apyrous, can neither be fused by heat, nor can undergo any other change. Diamonds were long thought to be possessed of this property. But some late experiments have shown, that diamonds may be entirely dissipated or evaporated by heat, and are therefore not intitled to be ranked among apyrous substances. Perhaps there is no body in nature essentially and rigorously apyrous. But it is sufficient that there be bodies apyrous relatively to the degree of fire which art can produce, to intitle them to that name.

AQUA, a term frequently met with in the writings of physicians, chemists, &c. for certain medicines, or menstrooms, in a liquid form, distinguished from each other by peculiar epithets, as *AQUA Alexiteria*, *AQUA Aluminosa*, *AQUA Mirabilis*, &c. for which see PHARMACY.

AQUA Extincta, or *Extinguished Water*, as aquafortis into which some river-water has been poured, in order to qualify it, and render it less corrosive. Its use is to get the silver from the aquafortis that served to part gold from it.

AQUA Fortis, a name given by artists to nitrous acid of a certain strength, from its dissolving power: that which is concentrated and smoking, is called *spirit of nitre*. The aquafortis used by dyers, brass-founders, &c. is not only weaker than spirit of nitre, but contains a portion of vitriolic acid. It may be made by distilling crude nitre with calcined vitriol, equal parts. The nitrous acid, expelled by the vitriolic, will rise in red fumes, and pass into the receiver. The vitriolic acid, uniting with the alkaline basis of the nitre, forms vitriolated tartar; but, there being more vitriolic acid than is requisite to saturate the alkali, the surplus rises with the nitrous acid: aquafortis, therefore, is a mixture of these two acids. It may also be made by distilling crude nitre with somewhat more than half its weight of oil of vitriol; or by mixing one part of oil of vitriol with nine parts pure spirit of nitre. See CHEMISTRY-Index.

AQUA Marina, a name by which the jewellers call the beryl, on account of its sea-green colour. See BERYL.

AQUA Regia, a compound of nitrous and marine acid, in different proportions according to the purpose for which it is intended. It is usually made by dissolving in nitrous acid, sal ammoniac, or common salt, both which are combinations of marine acid with alkali. When made with sal ammoniac, the common proportion is one part of this salt to four parts of nitrous acid; but to dissolve platina, equal parts are requisite. A purer aqua regia may be made by simply mixing the two acids.

Aqua regia is particularly used as a menstruum for gold; it likewise dissolves all other metals, except silver. The gold dissolved in aqua regia is, in fact, dissolved in the dephlogisticated marine acid only, which, being deprived of its phlogiston by the nitrous acid, recovers it from the gold, and thus renders gold soluble; for metals are not soluble in acids until they lose a part of their phlogiston. See CHEMISTRY-Index.

AQUA Secunda, aquafortis diluted with much pure water. It is employed in several arts, to clean the surface of metals and certain stones, and for various other purposes.

AQUA Vitæ, is commonly understood of what is otherwise called *brandy*, or spirit of wine, either simple, or prepared with aromatics. Some, however, distinguish between them; appropriating the term *brandy* to what is drawn from wine, or the grape; and *aqua vitæ* to that drawn after the same manner, from malt, &c.

AQUAE Augusta, (Ptolemy); *Aquæ Tarbellicæ*, (Antonine); *Aquensis Civitas*, in the Notitia. Now *Acqs*, or *Dax*, a town in Gascony, on the river Adour, famous for its baths. W. Long. 1. 40. N. Lat. 43. 56.

AQUAE Bilbilitanæ, (Antonine); baths 24 miles to the west of Bilbilis. Now *Banos de Albama*, in Aragon.

AQUAE Calidæ, (Ptolemy); *Aquæ Solis*, (Antonine); a place of the Belgæ in Britain, famous for its hot waters. Now *Bath*, in Somersetshire; W. Long. 1. 5. Lat. 51. 20.

AQUAE Calidæ, (Ptolemy); *Aquicaldensis*, (Pliny); formerly in great repute, and a public bath; whose ruins still remain testimonies of the Roman grandeur. Now *Orense*, in Galicia, still famous for its baths; on the river Minho, 54 miles south-east of Compostella. W. Long. 8. 30. Lat. 42. 30. Also a place in the bay of Carthage, (Strabo). Other *Aquicaldenses*, to the north of Gerunda in Catalonia, (Ptolemy).

AQUAE Calidæ, a colony between the rivers Serbetes and Savus, in Mauretania Cæsariensis (Ptolemy).

AQUAE Celeniæ, (Ptolemy); or *Cilina*, (Antonine). Now *Caldas*, a hamlet on the Minho, in Galicia.

AQUAE Convenarum, a hamlet of Gaul, in Aquitaine, (Antonine), and on the borders of the Convenæ, or le Cominge, at the foot of the Pyrenees, near the source of the Garonne. Now *Bagnères*. W. Long. 3. 39. Lat. 42. 20.

AQUAE Cutiliæ, a lake of the Sabines, in the territory of Reate (Pliny); *Lacus Cutiliensis*, (Varro); with a moveable island in it, (Seneca, Pliny); supposed to be the centre of Italy, (Varro). The waters were medicinal, and extremely cold, good for a weak stomach and in weak nerves; they seemed to act by a kind of suction, which approached to a bite, (Pliny). Vespasian used them every summer; and there he died, (Sueton, Xiphilin from Dio). Now *Lago di Contigliano*.

AQUAE Flaviæ, a town on the confines of Galicia and Portugal, so called from Vespasian and Titus. The inhabitants are called *Aquiflavienses*, coins. Now called *Chaves*, a mean hamlet: but the ruins of its bridge testify its former grandeur. W. Long. 6. 6. Lat. 41. 40.

AQUAE Helvetiæ, described by Tacitus as a municipal town, and much frequented for its excellent water, and though he does not mention its name, Cluverius

Aqua

sup.

Aquæduct supposes it to be Baden, in Switzerland, on the rivulet Limat, which soon after falls into the Aar. It is called the Upper, to distinguish it from another called the Lower Baden, in Alsace. E. Long. 8. 49. Lat. 47. 55.

AQUAE Merom (Joshua), famous for the defeat of Jabin: supposed to be the lake called *Samachonitis*, or *Semechonitis*, by Josephus; into which the river Jordan falls, before it comes to the sea of Genezareth, or Galilee.

AQUAE Pannoniae, famous baths of Austria, now called *Baden*, 28 miles to the south of Vienna.

AQUAE Patavinæ, are baths in the territory of Venice near Padua, (Pliny); called *Fontes Aponi* (Livy, Martial). Now *Bagni d' Abapo*. E. Long. 13. 48. Lat. 45. 15.

AQUAE Quintianæ, put by Ptolemy in room of the *Aque Cilinae* of Antonine. Now supposed to be *Sarria*, a town of Gallicia, on a rivulet of the same name, three leagues to the south of Lugo.

AQUAE Sextiæ, a colony to the north of Marseilles, so called both from the founder Sextius Calvinus, and from its quantity of water, and number of cold and hot springs; built after the defeat of the Salyes, or Salvii, whose territory in the south of Provence reached from the Rhone to the borders of Italy, (Livy, Velleius, Strabo, Ptolemy). By an inscription the colony appears to have been either increased or renewed by Augustus. In the Notitia it is called *Civitas Aquensis*. Now *Aix*. Here the Teutones and Cimbri were defeated with a great slaughter by Marius. E. Long. 6. 4. Lat. 48. 4.

AQUAE Statiellæ, or *Statiellorum*, (Pliny), a town in Liguria, on the river Bormia. Now *Acqui*, a town of Montferrat. E. Long. 8. 40. Lat. 44. 45.

AQUAE Tauri, hot waters or baths in Tuscany, at the distance of three miles from the sea, said to be discovered by a bull, hence the appellation. There are still to be seen the ruins of these baths. Now *Aqua-pendente*, in Orvieto. E. Long. 12. 40. Lat. 42. 40.

AQUÆDUCT, in hydraulics and architecture, a structure formed for conveying water from one place to another, over grounds that are unequal. The word is compounded of the Latin substantive *aqua* water, and *ductus* a channel by which that water may be conducted.

Architects distinguish two kinds of aquæducts; the *visible*, and the *subterraneous*.—The *visible* are constructed in vallies or marshes, and protracted in longitude or latitude as the situation requires. They are composed of adminicula for supporting the arches and confining the stream, and of arcades.—The *subterraneous* are formed, by piercing the mountains, and conducting them below the surface of the earth. They are built of stone, hewn or rough; and covered above with vaults, or with flat stones, which may be termed *flags*; these flags shelter the waters from the heat of the sun.

They divide them still into *double* and *triple* aquæducts; that is to say, such as are supported either by two or by three ranges of arcades. Such was the aquæduct which Procopius reports to have been built by Cosroes king of the Persians, for the city of Petra in Mingrelia: it had three conduits upon the same line, each elevated above the other.

Frequently aquæducts are paved. Sometimes the waters flow through a natural channel of clay. Fre-

quently they are conveyed by pipes of lead into reservoirs of the same metal, or into troughs of hewn stone. The channels are cut with an imperceptible descent, that the current may be accelerated by its own weight. Parallel to its course, on each side, is cut a narrow foot-path, where people may walk when necessary. By conduits, or grooves, the waters are conveyed into large cisterns, but not forced above their original level. To make them rise and issue from their apertures with force, they must be confined in tubes of a small diameter, and abruptly fall from a considerable declivity.

Aquæducts of every kind were long ago the wonders of Rome; the vast quantity of them which they had; the prodigious expence employed in conducting waters over arcades from one place to another, at the distance of 30, 40, 60, and even 100 miles, which were either continued or supplied by other labours, as by cutting mountains and piercing rocks; all this ought to surprise us; nothing like this is undertaken in our times: we dare not even think of purchasing public convenience at so dear a rate. Appias the censor advised and constructed the first aquæduct. His example gave the public luxury a hint to cultivate these objects; and the force of prodigious and indefatigable labour diverted the course of rivers and floods to Rome. Agrippa, in that year when he was ædile, put the last hand to the magnificence of these works. It is chiefly in this respect that the modern so much resembles the ancient city of Rome. For this advantage, she is peculiarly indebted to Sextus V. and to Paul V. who for grandeur and magnificence emulated the masters of the universe*. There are still to be seen, in different places contiguous to Rome, striking remains of these aquæducts; arches continued thro' a long space, over which were extended the canals which carried the water to the city. The arches are sometimes low, sometimes raised to a vast height, to humour the tumidities or depressions of the ground. There are some which have two arcades; one constructed above the other; and this precaution was observed, lest the height of a single arcade, if extended as far as the situation required, might render the structure less firm and permanent. They are commonly of bricks; which by their cement cohere so strongly, that the parts are not separated without the utmost difficulty.—When the elevations of the ground were enormous, it became necessary to form *subterraneous* aquæducts. These carried the waters to such aquæducts as were raised above ground, in the declivity or at the foot of mountains. If the artificial channel of the water was not susceptible of a downward bias but by passing through a rock, through this they cut a passage at the same height with the superior aquæduct: such an one may be seen above the city of Tivoli, and at the place called *Vicavaro*. The canal which formed the course of the aquæduct is hewn out of the rock to the extent of more than a mile, about five feet in height and four in breadth.

There is one thing, however, which deserves to be remarked. It is, that these aquæducts, which might have been directed in a straight line to the city, did not arrive at it but by frequent and winding mazes. Some have said that this oblique tract was pursued to avoid the expence which must attend the building of arcades to an extraordinary height: others, that it was their intention to diminish the impetuosity of the current; which,

*See *New Memoirs of Italy*, vol. i.

Aquæduct. which, rolling in a straight line through an immense space, must always have increased its velocity, must have worn the canals by perpetual and forcible attrition, and of consequence afforded an impure and unwholesome draught to the inhabitants. But since there was so great descent between the cascade of Tivoli and Rome, it is demanded why they should go to draw water from the same river at the distance of more than 20 miles higher; nay, of more than 30 miles, if we reckon the curvatures of its direction through that mountainous country? It is replied, the motive of obtaining the water more salubrious, and more limpid, was sufficient to make the Romans think their labour necessary, and their expence properly bestowed; and to those who reflect that the waters of this river were impregnated with mineral particles, and by no means wholesome, the answer will appear satisfactory.

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If any one will cast his eyes upon plate 128th of the Antiquities of Father Montfaucon, he will see with how much care these immense works were constructed. From distance to distance spiramenta were left, that, if the water should happen to be stopped by any accident, it might gradually disembogue, till they could clear its ordinary passage. There were likewise, even in the very canals which conveyed the water, cavities considerably deeper than its internal surface, into which the stream was precipitated, and where it remained stagnant till it was refined from mud and seculence; and ponds, where it might expand itself till it was purified.

The aquæduct of the *aqua Marcia* had an arch of 16 feet in diameter. The whole was composed of three different kinds of stone; one of them reddish, another brown, and a third of an earth colour. Above, there appeared two canals; of which the highest was fed by the new waters of the Tivone, and the lower by what they call the *Claudian* river. The entire edifice is 70 Roman feet high. Near this aquæduct, we have in Father Montfaucon the plan of another with three canals; the highest supplied by the water called *Julia*, that in the middle from *Tepula*, and the lowest from the *aqua Marcia*.

The arch of the aquæduct of the *aqua Claudia* is of hewn stone, very beautiful; that of the aquæduct of the *aqua Neronia* is of bricks: they are each of them 72 Roman feet in height.

The canal of the aquæduct which was called the *aqua Appia*, deserves to be mentioned for a singularity which is observed in it; for it is not, like the others, plain, nor gradual in its descent; but much narrower at the lower than the higher end.

The consul Frontinus, who superintended the aquæducts under the emperor Nerva, mentions nine of them which had each 13,594 pipes of an inch in diameter. Vigerus observes, that, in the space of 24 hours, Rome received 500,000 hogheads of water.

We might likewise have mentioned the aquæduct of Drusus, and that of Rimini: but we shall satisfy ourselves with observing here, that Augustus caused all the aquæducts to be repaired; and afterwards pass to other monuments of the same kind, and still more important, which give the most striking ideas of Roman magnificence.

One of these monuments is the aquæduct of Metz, of which a great number of arcades still remain. These arcades crossed the Moselle, a river which is broad

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and vast at that place. The copious sources of Gorze furnished water for the representation of a sea-fight. This water was collected in a reservoir: from thence it was conducted by subterraneous canals formed of hewn stone, and so spacious that a man could walk erect in them: it traversed the Moselle upon its superb and lofty arcades, which may still be seen at the distance of two leagues from Metz; so nicely wrought and so firmly cemented, that, except those parts in the middle which have been carried away by the ice, they have resisted, and will still resist, the severest shocks of the most violent seasons. From these arcades, other aquæducts conveyed the waters to the baths, and to the place where the naval engagement was mimicked.

If we may trust Colmenarus, the aquæduct of Segovia may be compared with the most admired labours of antiquity. There still remain 159 arcades, wholly consisting of stones enormously large, and joined without mortar. These arcades, with what remains of the edifice, are 102 feet high; there are two ranges of arcades, one above another. The aquæduct flows through the city and runs beneath the greatest number of houses which are at the lower end.

After these exorbitant structures, we may be in some degree believed when we speak of the aquæduct which Louis XIV. caused to be built near Maintenon, for carrying water from the river Bucq to Versailles: it is perhaps the greatest aquæduct which now subsists in the world: it is 7000 fathoms in length, above 2560 in height, and contains 242 arcades.

AQUAMBOE, one of the greatest monarchies on the coast of Guinea in Africa, stretching 20 miles in breadth, and ten times that space in length from east to west. According to Bosman, the coast is divided into a great number of petty royalties, but all of them subject to the king of Aquamboe, who indiscriminately uses an unlimited authority over them and the meanest of his subjects. His despotism gave rise to a proverbial saying, that "there are only two ranks of men at Aquamboe; the royal family, and slaves." The natives of this country are haughty, turbulent, and warlike; and their power is formidable to all the neighbouring nations. They grievously infest such nations as are tributaries to the king of Aquamboe, entering their territories by troops, and carrying off from the inhabitants whatever they think proper; nor do they ever meet with any opposition from the inhabitants, as they are sensible the king would not fail to resent this as an indignity offered to him.

AQUAPENDENTE. See **FABRICIUS**.

AQUARIANS, Christians in the primitive church who consecrated water in the eucharist instead of wine. This they did under pretence of abstinence and temperance; or, because they thought it universally unlawful to eat flesh or drink wine. Epiphanius calls them *Energetes*, from their abstinence; St Austin, *Aquarians*, from their use of water; and Theodoret, who says they sprang from Tatian, *Hydroporastæ*, because they offered water instead of wine.

Besides these, there was another sort of Aquarians, who did not reject the use of wine as unlawful; for they administered the eucharist in wine at evening service: but, in their morning assemblies, they used water, for fear the smell of wine should discover them to the heathens.

AQUARIUS, the WATER-CARRIER, in astronomy, the

Aquamboe

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Aquarius.

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the

Aquartia the 11th sign in the zodiac, reckoning from Aries; from which also the 11th part of the ecliptic takes its name.
 ||
Aquatinta. —The sun moves through Aquarius in the month of January; it is marked thus, ☿.

The poets feign, that Aquarius was Ganymede, whom Jupiter ravished under the shape of an eagle, and carried away into heaven, to serve as a cup-bearer, in the room of Hebe and Vulcan; whence the name.—Others hold, that the sign was thus called, because, when it appears in the horizon, the weather usually proves rainy.

The stars in the constellation Aquarius, in Ptolemy's catalogue, are 45; in Tycho's 41; in Hevelius's 47; in Flamsteed's 108.

AQUARTIA, in botany, a genus of the tetrandria monogynia class. The calyx is campanulated; the corolla is rotated, with linear divisions; and the berry is four-seeded. There is but one species, the *aculeata*, a native of America.

AQUATIC, in natural history, an appellation given to such things as live or grow in the water.

AQUATINTA, a method of etching on copper, lately invented, by which a soft and beautiful effect is produced, resembling a fine drawing in water-colours or Indian ink.

Previous to the operation upon the plate, the following powder must be prepared.—Take of asphaltum and fine transparent rosin, equal parts, suppose two ounces of each, and pound them separately. Through a muslin sieve (which may be formed with part of a chip-box of three or four inches diameter) sift upon a sheet of paper a thin stratum of the asphaltum, above which sift a similar layer of the rosin, and upon this another layer of asphaltum, continuing these alternate layers till both of the powders are exhausted: then pass the mixture through the same sieve upon the paper once or twice, or till both appear to be sufficiently incorporated; when the powder is ready for use. Some, instead of the above mixture, use gum sandarach pounded.

The main process is as follows.—A copper plate being polished in the usual way, lay the etching ground upon it, and etch the outlines of your design in the manner directed under the article **ETCHING**: The ground is then to be softened with a little grease, and wiped off with a piece of rag; leaving, however, as much grease upon the plate as just to dim the copper. You now sift your powder upon the surface of the plate; after which, strike the other side of it pretty smartly against the edge of the table, in order to discharge it of the loose powder: This done, with a hand-vice hold the back of the plate over a chaffing-dish of charcoal fire, till it become so hot as to give pain upon being touched with the back of the hand; and the powder which adhered to the grease will now be fixed to the plate. The plate being then suffered to cool, take turpentine varnish mixed with ivory black; and with a hair-pencil dipt in it, cover all the lights or places where there is no work or shades. A rim or border of bees-wax is now to be raised round the plate: Then having reduced the aquafortis to a proper strength by vinegar or water, you pour it on, and let it stand five minutes for the first or lightest shade: after which, pour it off; and having washed the plate with water, set it on edge to dry: Then with

the varnish stop up your light shades, pour on the aquafortis for the second tint, and let it stand five minutes more; proceeding in the same manner for every tint till you produce the darkest shades. If a bold open ground is wanted in any part, this requires an after-operation: The ground must be laid as the other, by sifting on the powder; only this powder is much coarser, and the plate must be much more heated in order that the particles of the powder may spread, and form small circles: even good clean rosin will do by itself.

In etching landscapes, the sky and distant objects are also performed by a second operation, and the powder is sifted upon the plate with a finer sieve. If the trees or any part of the fore-ground require to be higher finished, the plate must be entirely cleansed from grease with bread, and a ground laid in the common way of etching; when you may finish as highly and neatly as you please with the needle or point, by stippling with dots, and biting up those parts, or by a rolling-wheel.

The preceding is the method for prints of one single tint. But if different colours are to be expressed, there will be required as many different plates, each plate having only the part etched upon it which is designed to be charged with its proper colour: unless (as may happen in particular subjects) some of the colours are so distant from each other as to allow the printer room to fill them in with his rubber without blending them; in which case, two or more different colours may be printed from the same plate at once.—Where different plates are necessary, a separate one, having a pin in each corner, must be provided as a sole or bottom to the aquatinta plates; and these again must be exactly fitted, having each a small hole in their corners for passing over the pins of the sole: the said pins serving the double purpose of retaining the plates successively in their due position, and of directing the printer in placing the paper exactly on each plate so as not to shift; by which means each tint or colour will be exactly received on its proper place.—This is the method practised at Paris. A landscape or similar subject, however, may be printed off at once in the different proper colours, by painting these upon the plate. In this case, the colours must be pretty thick in their consistence; and the plate must be carefully wiped in the usual way after the laying on of each tint, as well as receive a general wipe upon its being charged with all the tints.

This art is kept as secret as possible by those who practise it; and it is believed that no particular explanation or directions, before the present, have been communicated to the public. In order to succeed, however, great care and judgment are requisite; and much depends upon a certain nicety of management, which is only attainable by practice.

AQUAVIVA, a town of the kingdom of Naples, and province of Barri.

AQUEDUCT. See **AQUÆDUCT**.

AQUEOUS, in a general sense, something partaking of the nature of water, or that abounds with it.

AQUEOUS Humour. See **ANATOMY**, p. 767.

AQUILA, in ornithology, a synonyme of the eagle. See **FALCO**.

AQUILA the **EAGLE**, in astronomy, a constellation of the northern hemisphere; usually joined with Antinous. The

Aquatinta
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Aquila.

Aquilegia. The stars in the constellation Aquila and Antinous, in Ptolemy's catalogue, are 15; in Tycho's, 19; in Hevelius's, 42; in the Britannic catalogue, 71.

AQUILA, a fine large city of Italy, and the capital of Abruzzo, seated on a hill, on the banks of the river Pescara, near its source. It has an ancient castle, and is a bishop's see immediately under the pope. The land about it produces great plenty of saffron. It was very near being all destroyed by an earthquake, in February 1703. The first shock was so terrible, that the inhabitants abandoned the city; but returning to vespers, it being Candlemas-day, the shocks followed one another with such violence, that 24,000 people perished, and great numbers were wounded; 800 were killed in one single church; many other churches, monasteries, noble buildings, and the town-house, were either swallowed up or overturned, together with the greater part of the city and its walls. Aquila stands 30 miles from the sea, and about 16 from the confines of the pope's dominions. E. Long. 14. 20. N. Lat. 42. 20.

AQUILEGIA, COLUMBINE: A genus of the pentagynia order, belonging to the polyandria class of plants; and, in the natural method, ranking under the 26th order, *Multiflorae*. It has no calyx; the petals are five, with a horn-like nectarium inserted between each; and there are five separate capsules.

Species. 1. The vulgaris, or wild columbine, with blue flowers, is found growing wild in some woods of England. 2. The alpina, with long oval flowers, grows naturally near Ingleborough-hill in Yorkshire. The flowers are much larger than those of the garden columbine. 3. The inverse, or garden columbine. Of this there are great varieties, not only in the colour and fulness of their flowers, but also in their form. These are commonly called *rose columbines*; the colours are chestnut, blue, red, and white, and some are finely variegated with two colours. There are others with sharp-pointed petals in form of a star, and of these there are single and double flowers of the same colours with the former. 4. The canadensis, or Canada columbine, flowers almost a month before the other sorts, and therefore is preserved in the gardens of the curious, though not at all remarkable for its beauty. There is a variety of this with taller flower-stems.

Culture. These plants are all propagated by sowing the seeds, or parting the old roots; but the former method is chiefly practised, for the old roots are very apt to degenerate. The seeds should be sown in a nursery-bed in August or September; for those which are kept till the spring seldom grow well, or at least remain in the ground a whole year. The spring following the plants will appear above ground, and should be kept clear of weeds; and if the season proves dry, they must be watered. In the middle or latter end of May, they will be strong enough to transplant; for which purpose, some beds of good undunged earth should be prepared, planting them therein at eight or nine inches distance from each other. In the following autumn, by which time the plants will have acquired strength enough to flower the year following, the roots should be carefully taken up and planted in the borders of the flower-garden: but where their roots are designed to be preserved in perfection, all the flower-stalks must be cut off as soon as the flowers are past. In order to

keep up a succession of good flowers, fresh seeds should be sown every year; and it will likewise be advantageous to exchange the seeds with some brought from a distant place.

Medicinal Uses. Columbine has been looked upon as aperient; and was formerly in great esteem among the common people for throwing out the small-pox and measles. A distilled water, medicated vinegar, and conserve, were prepared from the flowers; but they have long given place to medicines of greater efficacy.

AQUILEIA, a large city of the Carni; or Veneti, and a noble Roman colony, which was led thither between the first and second Macedonian wars, (Livy). It is washed by two rivers, the Natifo, and Turrus, (Pliny). The reason of leading this colony was, in order to be a bulwark against the neighbouring barbarians. The colony was afterwards increased with 1500 families by a decree of the senate, (Livy); from which it became a very famous port-town, (Herodian). The Emperor Julian ascribes the appellation to the augury of an eagle at the time of building it; but Isaac Vossius on Mela, to the great plenty of water, as if the town were called *Aquilegia*. The harbour, at the mouth of the Natifo, is distant 60 stadia from the city; so that ships of burden are towed up the river, (Strabo). In 452 it was besieged by Attila with an innumerable host of barbarians. The walls were assaulted by a formidable train of battering rams, moveable turrets, and engines, that threw stones, darts, and fire; and the monarch of the Huns employed the forcible impulse of hope, fear, emulation, and interest, to subvert the only barrier which delayed the conquest of Italy. Aquileia was at that period one of the richest, the most populous, and the strongest of the maritime cities of the Hadriatic coast. Three months were consumed without effect in the siege; till the want of provisions and the clamours of his army compelled Attila to relinquish the enterprise, and reluctantly to issue his orders that the troops should strike their tents the next morning and begin their retreat. But as he rode round the walls, pensive, angry, and disappointed, he observed a stork preparing to leave her nest in one of the towers, and to fly with her infant family towards the country. He seized, with the ready penetration of a statesman, this trifling incident which chance had offered to superstition; and exclaimed, in a loud and cheerful tone, that such a domestic bird, so constantly attached to human society, would never have abandoned her ancient seats, unless those towers had been devoted to impending ruin and solitude. The favourable omen inspired an assurance of victory; the siege was renewed and prosecuted with fresh vigour; a large breach was made in the part of the wall from whence the stork had taken her flight; the Huns mounted to the assault with irresistible fury; and the succeeding generation could scarcely discover the ruins of Aquileia. The place, however, which is still called *Aquileia*, there are several inscriptions and antiquities to be seen in it, which are worthy of a traveller's notice; and, though dwindled into a poor village, it gives a title to the patriarch of Aquileia. The patriarch is named by the Venetians, and resides at Udino, because the town of Aquileia belongs to the House of Austria. E. Long. 13. 30. N. Lat. 46. 20.

Aquilicum

||
Aquinum.

AQUILICIUM, or **AQUILICIANA**, in Roman antiquity, sacrifices performed in times of excessive drought, to obtain rain of the gods.

AQUILINE, something belonging to or resembling an eagle: Thus, an aquiline nose is one bent somewhat like an eagle's beak.

AQUILO, is used by Vitruvius for the north-east winds; or that which blows at 45° from the north toward the east point of the horizon.—The poets gave the name *aquilo* to all stormy winds dreaded by the mariner.

AQUILUS, among the ancients, a dark, or dusky colour approaching to black. Hence some of the Heathen gods were called *dii aquili*, q. d. *nigri*.

AQUIMINARIUM, in antiquity, a kind of lustral vessel, wherein the Romans carried their holy water for expiation and other religious offices.

AQUINAS (St Thomas), styled the *Angelical Doctor*, was of the ancient and noble family of the counts of Aquino, descended from the kings of Sicily and Arragon; and was born in the castle of Aquino, in the Terra di Lavora in Italy, in the year 1224 or 1225. He entered into the order of the Dominicans; and, after having taught school-divinity in most of the universities of Italy, at last settled at Naples: where he spent the rest of his life in study, in reading of lectures, and in acts of piety; and was so far from the views of ambition or profit, that he refused the archbishoprick of that city, when it was offered him by Pope Clement IV. He died in 1274, leaving an amazing number of writings, which were printed at Venice in 17 vols folio, in the year 1490. He was canonized by Pope John XXII. in the year 1323; and Pius V. who was of the same order with him, gave him, in 1567, the title of the Fifth Doctor of the church, and appointed his festival to be kept with the same solemnity as those of the other four doctors. His authority has always been of great importance in the schools of the Roman Catholics. Lord Herbert, in his Life of Henry VIII. tells us, that one of the principal reasons which induced that king to write against Luther was, that the latter had spoken contemptuously of Aquinas.

AQUINO (Philip d'), in Latin *Aquinas* or *Aquinius*, having turned from Judaism, had a pension from the clergy of France; and acquired much reputation by his knowledge of the Hebrew language, which he taught at Paris, in the reign of Louis XIII. and by the books he published, among which is his *Didionarium Hebræo-Chaldaeo-Thalmudico-Rubbinicum*. His grandson, Anthony D'Anquin, was first physician to Louis XIV.

AQUINO, a town in Italy, in the kingdom of Naples, and Terra di Lavora; a bishop's see, but ruined by the Emperor Conrad, and now consisting of about 35 houses. It was the birth-place of the poet Juvenal, and of Thomas Aquinas. E. Long. 14. 30. N. Lat. 41. 32.

AQUINUM, (anc. geog.) a large municipal town, and a Roman colony on the borders of the Samnites, washed by the river Melpha (Strabo). The birth-place of Juvenal, as he himself testifies. The inhabitants are called *Aquimates*; now *Aquino*, but almost in ruins, in the territory of Lavarò. E. Long. 17. 11. N. Lat. 41. 35.

AQUITANIA (anc. geog.), one of the three principal divisions of Gallia Comata (Cæsar); bounded by the Garonne, the Pyrenees, and the Ocean: this is the *Aquitania Cæsariana*, or *Vetus*. Augustus set the different boundaries, viz. the Loire, the Cevennes, the Pyrenees, and the Ocean (Strabo). It was called *Gallia Aquitanica* (Pliny); and in the old Notitiz, *Provincia Aquitanica*. The people are called *Aquitani* (Cæsar). Now comprising Guienne (which seems to be a corruption of Aquitania) and Gascony.

AR (anc. geog.), the metropolis of Moab, in Arabia Petrea (Moses); and the royal residence situate on the east side of the river Arnon. It was called also *Rabba* (Joshua); and to distinguish it from Rabba of the Ammonites, *Rabbat Moab*, and on coins *Rabbath Moma* (Reland). Eusebius says it was called *Areopolis* in his time, from *Ar* and *Polis*. The inhabitants are called *Areopolitæ*. St Jerome says that this city was entirely destroyed by an earthquake when he was a young man.

ARA THURIBULI, the altar of incense, in astronomy, a southern constellation, not visible in our hemisphere, consisting, according to Ptolemy, of seven stars; and according to Sharp's Catalogue, annexed to that of Mr Flamsteed, of nine stars.

ARA, in astronomy, a southern constellation, containing eight stars.

ARAB, or **ARABIAN HORSE**. See **EQUUS**.

ARABESQUE, or **ARABESK**, something done after the manner of the Arabians. *Arabesque*, *Grotesque*, and *Morefque*, are terms applied to such paintings, ornaments of freezes, &c. wherein there are no human or animal figures, but which consist wholly of imaginary foliages, plants, stalks, &c. The words take their rise from hence, that the Moors, Arabs, and other Mahometans, use these kinds of ornaments; their religion forbidding them to make any images or figures of men or other animals.

ARABIA, a country of Asia, famous from the remotest antiquity for the independency of its inhabitants during the vast conquests of the Assyrians, Persians, Greeks, and Romans; and, in latter times, for being the centre of an empire equal, if not superior, in extent to any that ever existed.

This country, or at least the greatest part of it, was in the earliest ages called *Arabab*. Concerning the etymology of which word there are various conjectures. It has most generally been derived from the Hebrew word *אַרָבָא*, signifying, *the west*, *mixture*, or *traffic*; but, according to M. Volney, *Arab*, in the ancient language of these countries, signifies a *solitude* or *desert*. In its largest extent, Arabia lies between the 12th and 35th degrees of N. Lat. and the 36th and 61st of E. Long. Its greatest length from north to south is about 1430 miles, and its breadth from east to west is 1200. It is bounded on the west by Palestine, part of Syria, the isthmus of Suez, and the Red Sea, called by the Arabs the sea *Al Kolzum*; on the east by the Euphrates, the Persian gulf, and bay of Ormos; on the north, by part of Syria, Diyar-Becr, Irak, and Khuzestan; and on the south by the straits of Babel-Mandel and the Indian ocean. It grows narrower as we approach the frontiers of Syria and Diyar-Becr: and, by reason of the proximity of the Euphrates to the Mediterranean, may be looked upon as a peninsula.

Aquitania

||
Arabia.Whence
named.

Boundaries.

Arabia. peninsula, and that one of the largest in the whole world. — Arabia Proper, however, is much narrower, including little more than what was comprehended by the ancients under the name of Arabia Felix, which we shall presently describe; and here the Arabs have been settled almost since the flood.

³
Division.

The first division of the peninsula of Arabia was into *Arabab* and *Kedem*, as we learn from scripture; the first of which implies the west, and the other the east, denoting the situation of the two countries. Ptolemy was the first who divided the peninsula we speak of into three parts, Arabia Petræa, Arabia Deserta, and Arabia Felix, which division has generally prevailed since his time.

Arabia Petræa, on the east, was bounded by Syria and Arabia Deserta; on the west, by Egypt, or rather the isthmus of Suez which separates Asia from Africa, and the Heroopolitan gulph or western arm of the Red sea; on the north, by Palestine, the lake Asphaltites, and Cœlesyria; and on the south by Arabia Felix. This tract did not admit of much cultivation, the greatest part being covered with dry sands, or rising into rocks, interspersed here and there with some fruitful spots. Its metropolis was Petra, which by the Syrians was styled *Rakam*, and in Scripture *Joktheel*. Several other cities of Arabia Petræa are mentioned by Ptolemy; but as it is very improbable such a barren country should abound with large cities, we must look upon them as inconsiderable places.

Arabia Deserta was bounded on the north by the Euphrates, which separated it from Mesopotamia; on the west, by Syria, Judæi, and Arabia Petræa; on the east, by a ridge of mountains which separated it from Babylonia and Chaldea; on the south, by Arabia Felix, from which it was likewise separated by several ridges of hills. By far the greatest part of this kingdom, as well as the former, was a lonesome desert, diversified only with plains covered with sand, or mountains consisting of naked rocks and precipices; nor were they ever, unless sometimes at the equinoxes, refreshed with rain. The few vegetables which they produced were flinted by a perpetual drought, and the nourishment afforded them by the nocturnal dews was greatly impaired by the heat of the sun in the day-time. Throughout the deserts were found huge mountains of sand, formed by the violence of the winds that continually blew over them in the day-time, though they ceased in the night. Wells and fountains were for the most part exceedingly rare; however, notwithstanding the sterility of these countries, the vast plains of sand just now mentioned were interspersed with fruitful spots, which appeared here and there like so many islands in the midst of the ocean. These being rendered extremely delightful by their verdure, and the more so by the neighbourhood of those frightful deserts, the Arabs encamped upon them: and having consumed every thing they found upon one, removed to another, as is the custom of their descendants the Bedowens at this day. These fruitful spots were likewise frequent in Lybia, and by the Egyptians called *anasēs*, or *abases*, as we learn from Strabo. The barren part of Arabia Felix, bordering upon the Red Sea, was in like manner interspersed with abases; which probably gave the name of *Abaseni* to a nation settled there, and in the adjacent fertile region. A body of these, it is said, cross-

ing the straits of Babel-Mandel, passed into Ethiopia, which from them received the name of *Abassia*. From this account of Arabia Deserta, we may reasonably conclude, that the towns said by Ptolemy to have been situated in it were places of very little consequence.

Arabia Felix was bounded on the north by the two kingdoms just described; on the south, by the Red sea; on the east and west, by part of that sea, together with the Arabian and Persian gulfs. In Strabo's time, it was divided into five provinces, by the oriental historians called *Yaman*, *Hejaz*, *Tebéma*, *Najd*, and *Yamama*. In this district stood several towns, particularly Nyfa, famous for being the birth-place of Bacchus; and Musa, or Muza, a celebrated emporium or harbour, where the Arabian merchants resorted with their frankincense, spices, and perfumes. These two were situated in the province of Yaman. In that of Hejaz stood the still more famous cities of Mecca and Medina; also Thaifa or Taifa, Gjudda or Jodda, Yanbo or Al Yanbo, and Madian, the Modiana of Ptolemy, and the Midian or Madian of Scripture.

At what time the above mentioned kingdoms were first peopled we have no certain accounts. The most considerable nations inhabiting Arabia Petræa, in the early ages, were the Ishmaelites, the Nabatei or Nabatheans, the Cedraei or Kedareni, and the Agareni or Hagareni; and of these the Ishmaelites were the most powerful, if they did not comprehend all the rest; and if the Hagareni were not the same people with them, they must at least have been nearly related. Kimchi, an oriental historian, insinuates, that they were originally the children of Hagar by an Arab, after she had left Abraham. In after ages, the names of all the nations situated here were absorbed in that of *Saracens*, by which the Ishmaelites are distinguished in the Jerusalem Targum. A nation also is mentioned by Pliny, called *Arraceni*, and *Saraceni* by Ptolemy and Dioscorides, which was probably no other than the Ishmaelites above mentioned. In Arabia Deserta several tribes resided, all of whom were very obscure, except the Aisita and Agræi. The former are supposed by Bochart to have been Job's countrymen, and the latter to have been the same with the Hagareni, Arraceni, or Saraceni, above mentioned. Arabia Felix was inhabited by many different tribes; the most remarkable of which were the Sabæi, Gerræi, Minæi or Minnæi, Atramitæ, Maranitæ, Catabani, Ascitæ, Homeritæ, Sapphoritæ, Omanitæ, Saraceni, Nabathæi, Thamydæni, and Bnizomenæ; but neither their limits nor situation can now be determined with any manner of precision.

According to the oriental historians, the Arabs are to be divided into two classes; viz. the *old lost Arabians*, and the *present*. The most famous tribes among the former were those of Ad, Thâ mud, Tasm, Jadès, Jorham, Amalek, Amtem, Hasbem, Abil, and Bâr. Concerning these, though now entirely lost and swallowed up among other tribes, there are some remarkable traditions, of which the following may serve as a specimen.

The tribe of Ad deduced their origin from Ad the son of Aws, or Uz, the son of Aram, the son of Shem, who, after the confusion of tongues, settled in Al Abkaf, or the winding sands in the province of Hadramant, on the confines of Yaman, where his posterity greatly

Arabia.

greatly multiplied. Their first king was Sheddâd, the son of Ad, who built a stately palace and made a delightful garden in the deserts of Aden, which he designed as an imitation of the celestial paradise. This garden he called *Irem*: and when it was finished, he set out with a great retinue to take a view of it; but, having some thoughts of assuming divine honours, he was destroyed by a tempest from heaven, while yet a day's journey from his paradise. The garden and palace, however, were preserved, though invisible, as a monument of divine vengeance.

After the death of Sheddâd, the kingdom of Ad was governed by a long series of princes, concerning whom many fables are related by the eastern writers. The conclusion of their history, however, is as follows. "The Adites, in process of time, falling from the worship of the true God, into idolatry, God sent the prophet Hûd, supposed to be the same with Heber, to preach to and reclaim them. But they refusing to acknowledge his mission or to obey him, God sent an hot and suffocating wind, which blew seven nights and eight days, and entering at their nostrils, passed thro' their bodies, and destroyed them all, a very few only excepted, who had listened to Hûd, and retired with him to another place." Others relate, "that, before this terrible catastrophe, they had been previously chastised with a three years drought; and therefore sent Kail Ebn Ithar, and Morthed Ebn Sdaa, with 70 other principal men to Mecca, then in the hands of the tribe of Amalek, whose prince was Moawiyah Ebn Beer, to obtain of God some rain. Kail having begged of God that he would send rain to the people of Ad, three clouds appeared, a white, a red, and a black one; and a voice from heaven ordered him to choose which he would. Kail failed not to make choice of the last, thinking it would be laden with most rain; but when this cloud came over them, it proved to be fraught with the Divine vengeance, and a tempest brought forth from it which destroyed them all.

7
Arabs from
whom de-
scended.

The present Arabs, according to their own historians, are sprung from Kahtan, the same with Joktan, the son of Eber; and Adnan, descended in a direct line from Ishmael the son of Abraham. The former of these they call the *genuine* or *pure* Arabs, and the latter the *naturalized* or *insidious* Arabs.

Joktan the son of Eber had 13 sons, who some time after the confusion of languages settled in Arabia, extending themselves from Mesha to Sephar, a mountainous place in the south-eastern part of that peninsula. According to the Arabian historians, he had 31 sons, all of whom left Arabia and went into India, except two, viz. Yarab and Jorham; the former of whom, they say, gave the name both to their country and language. Ishmael and his mother Hagar having been dismissed by Abraham, entered into the wilderness of Paran, as related in the book of Genesis. The sacred historian informs us, that during his residence in the wilderness he married an Egyptian; and the Arabian writers say that he also took to wife the daughter of Modad king of Hejaz, lineally descended from Jorham the founder of that kingdom. By the Egyptian he was probably the father of the Scenite or wild Arabs; and having allied himself to the Jorhamites, he is considered by the Arabians as the father of the greatest part of their nation.

Kahtan, or Joktan, is said to have first reigned, and worn a diadem in Yaman; but the particulars of his reign we no where learn. He was succeeded by Yarah already mentioned, he by Yashab, and Yashab by Abd Shems. He was successful in his expeditions against his enemies, carried off great spoils, and took many of them prisoners. He is said to have built the city of Saba or Mareb, and above it a stupendous mound or building which formed a vast reservoir, containing all the water that came down from the mountains. By means of this reservoir the kings of Yaman not only supplied the inhabitants of Saba and their lands with water, but likewise kept the territories they had subdued in greater awe, as by cutting off their communication with it they could at any time greatly distress them. Abd Shems was succeeded by his son Hamyar, from whom the tribe of Hamyar is said to take its name; and he by a series of 17 kings, concerning whom we have no remarkable particular, except that from one of them called *Africus* the continent of Africa took its name. The last of these was succeeded by a daughter named *Balkis* or *Belkis*, whom some will have to be the queen of Sheba who paid a visit to Solomon. After Balkis came Malea, surnamed *Nasberolneam* on account of his magnificence and liberality. Having had bad success in an expedition, where his army was overwhelmed by torrents of sand, he caused a brazen statue to be erected with the following inscription in the old Hamyaritic character. "There is no passage behind me, no moving farther; the son of Sharhabil." He was succeeded by Shamar Yaraash, so called on account of his being affected with a constant tremor. To this prince the city of Samarcand is said to owe its existence. After Shamar Yaraash we have a list of 15 kings, of whom nothing worth mentioning is recorded, except of one Abu Carb Afaad, who adorned the Caaba or temple of Mecca with tapestry, and first introduced Judaism among the Hamyarites. He was put to death by his subjects, probably on account of religion. The last of the 15 kings above mentioned was called *Abrahah*, who was succeeded by his son Sabban. He had that famous sword called *Samsannab*, which afterwards came into the hands of the khalif Al Rashid. This prince was succeeded by Dhu Shanater, who had six fingers on each hand. He was abandoned to unnatural lust, and dethroned for abusing some of the noblest youths in the kingdom. To him succeeded Yusef, who lived about 70 years before Mahomet. He persecuted all those who would not turn Jews, putting them to death by various tortures, the most common of which was throwing them into a glowing pit of fire; whence he had the appellation of the *lord of the pit*. This persecution is taken notice of in the Koran. The last of the Hamyaritic monarchs was Dhu Jadan, according to Abulfeda; but, according to others, the Yusef just mentioned, who was surnamed *Dhu Nowas* on account of his flowing curls, and was the last who reigned in an uninterrupted succession. He was a bigotted Jew, as already mentioned; and treated his subjects with such barbarity, that they were obliged to ask the assistance of Elesbaas or Elesbaan, king of Ethiopia, against him. Dhu Nowas, not being able to make head against the Ethiopians, was at last driven to such extremity, that he forced his horse into the sea, and lost both his life and crown together.

Araia.

8

Joktan the
first king.

9

Reservoir
of Saba.

10

Balkis sup-
posed to be
the queen
of Sheba.

11

Samarcand
by whom
built.

12

Yusef, a
persecutor.

13

His subjects
call in the
king of E-
thiopia,
who de-
thrones
Yusef.

The

Arabia.
14
Christian
religion es-
tablished
in Arabia.

The king of Ethiopia, having thus become master of Yaman, established there the Christian religion, and fixed upon the throne one Abryat an Ethiopian. He was succeeded by Abraha-Ebn-Al Sabah, surnamed the *Slit-nosed*, from a wound he had formerly received in it. He was likewise styled *lord of the elephant*, from a story too ridiculous to deserve notice. He was succeeded by two other Ethiopian princes; but at last Scif Ebn Dhu Yazan, of the old royal family of Hamyar, having obtained assistance from the king of Persia which had been denied him by the Emperor Heraclius, recovered his throne, and drove out the Ethiopians; but was himself slain by some of them who were left behind. The succeeding princes were appointed by the Persians, till Yaman fell into the hands of Mahomet.

15
Ethiopians
driven out.

16
Terrible
inundation
by the
breaking
down of
the refer-
voir of
Saba.

We have already taken notice of the vast mound or reservoir made by Abd Shems, from which he supplied the city of Saba with water. This building stood like a mountain above the city, and was by the Sabæans esteemed so strong, that they were under no fear of its ever failing. The water rose almost to the height of 20 fathoms; and was kept in on every side by a work so solid, that many of the inhabitants had their houses upon it. About the time of Alexander the Great, however, a terrible inundation happened. According to the Arabian historians, God being displeased at the pride and insolence of the inhabitants of this city, resolved to humble them; and for this purpose sent a mighty flood, which broke down the mound by night whilst the inhabitants were asleep, and carried away the whole city with the neighbouring towns and people. This inundation is styled in the Koran the *inundation of Al-Harm*; and occasioned so terrible a destruction, that from thence it became a proverbial saying to express a total dispersion, "that they were gone and scattered like Saba."—By this accident no less than eight tribes were forced to remove their habitations; some of which gave rise to the kingdoms of Hira and Ghassan.

17
Origin, &c.
of the king-
dom of Hi-
ra.

The kingdom of Hira was founded by Malec, a descendant of Cahlan the brother by Hamyar; but after three descents, the throne came by marriage to the Lakhmians, who were descendants of Lakhm the son of Amru, the son of Abd Ems. These princes, whose general name was *Mondar*, preserved their dominion, notwithstanding some small interruption from the Persians, till the khalifat of Abubecr, when Al Mondar Maghrur, the last of them, lost his life and crown by the arms of Khaled-Ebn-Al-Walid. This kingdom continued 622 years and eight months, according to Ahmed Ebn Yusef. Its princes were under the protection of the kings of Persia, and were their lieutenants over the Arabs of Irak, as the kings of Ghassan were for the Roman emperors over those of Syria.

18
Of Ghassan.

The kingdom of Ghassan was founded by the tribe of Azd, who, according to some, settling in Syria Damascena, near a water called *Ghassan*, from thence took their name; but others say they went under this appellation before they left Yaman. Having driven out the Dajaamian Arabs, who before possessed the country, they made themselves masters of a considerable territory. Here they maintained themselves, according to some 400, according to others 600, and according to Abulfeda 613 years, when the last of their kings submitted to the khalif Omar, and embraced the Mahometan religion; but receiving afterwards a disgust, soon

returned to Christianity, and took refuge in Constantinople.

Arabia.
19
Of Hejaz.

The kingdom of Hejaz was founded by Jorham the son of Kahtan, where princes of his line reigned till the time of Ishmael, who married the daughter of Modad one of those princes. Some authors relate that Kidar, one of Ishmael's sons, had the crown resigned to him by his uncles the Jorhamites: but, according to others, the descendants of Ishmael expelled that tribe; who, retiring to Johainah, were after various adventures destroyed by an inundation. After the expulsion of the Jorhamites, the government of Hejaz seems not to have continued long in the hands of one prince, but to have been divided among the heads of tribes, almost in the same manner as the Arabs of the desert are governed at this day. The tribe of Khozaab, after the above mentioned inundation of Saba, fled into the kingdom of Hejaz, and settled themselves in a valley called *Marri* near Mecca. Here they founded an aristocracy, assuming to themselves both the government of the city of Mecca, and the custody of the Caaba or temple there. They continued masters of this city and territory, as well as presidents of the Caaba, for many ages; till at length one Kofa, of the tribe of Koreish, circumvented Abu Gabshan, a weak and silly man, of whom, while in a drunken humour, he bought the keys of the temple for a bottle of wine; but when Abu Gabshan grew cool, and reflected on his imprudence, he sufficiently repented of what he had done; whence the Arabian proverbs, "More vexed with late repentance than Abu Gabshan; More foolish than Abu Gabshan," &c. The tribe of Khozaab endeavoured afterwards to give some disturbance to the Koreish in the possession of the keys of the Caaba, which furnished the latter with a pretence for depriving them of the civil government of Mecca. After the Koreish had possessed themselves of this city, they kept up the same form of government which had prevailed there before. Besides these kingdoms, there were many others of lesser note, of which we find nothing remarkable.

20
Tribe of
Khozaab
assumes the
government
of Mecca.

21
Folly of A-
bu Gabshan.

Thus we have briefly mentioned the most memorable events recorded by the Arabian historians previous to the time of Mahomet; but, before entering upon an account of that famous impostor and the kingdom founded by him, it will be proper to take notice of several circumstances in different parts of the world, which at that time concurred to facilitate his scheme, and without which, in all probability, he would never have been able to accomplish it.

The first and great cause of Mahomet's success in his imposture, was the gross corruption and superstition with which the Christian religion was at that time obscured in all parts of the world. Had the pure doctrines of Christianity been then as publicly known as the ridiculous fopperies which deformed the Eastern and Western churches, Mahometanism could never have got a hearing. But, along with the true religion, mankind seemed also to have lost the use of their rational faculties, so that they were capable of swallowing the grossest absurdities; such as it now appears almost incredible that any of the human race could receive as truths. Another cause was, the manner of government and way of life among the Arabs. Divided into small independent tribes, they never were capable of a firm union but by superstition; and had

22
Causes of
Mahomet's
success.

Mahomet.

Arabia.

Mahomet attempted their conquest in any other way, it was impossible he could have succeeded. As there were also among them Jews, Pagans, and Christians of all sorts, this impostor, by adopting something out of every religion then extant, cunningly recommended himself to the professors of every one of them. Add to all this, that, by allowing of polygamy, and setting forth his paradise as consisting in the enjoyment of women, he adapted himself to the corrupt dispositions of mankind in general.

If the distracted state of religion favoured the designs of Mahomet on the one hand, the weakness of the Grecian and Persian monarchies assisted him no less powerfully on the other. Had those once formidable empires been in their vigour, either of them would have been sufficient to crush Mahometanism in its birth; but both of them were then strangely reduced. The Roman empire had continued to decline after the time of Constantine; the western parts of it were then entirely over-run by the Goths and other barbarous nations; and the eastern, or Greek empire, was so much reduced by the Huns on one hand, and the Persians on the other, as to be incapable of making any great effort. The Persian monarchy itself was in little better condition. It is true, they ravaged the dominions of the Greeks, and often overcame them in the field: but that was more owing to the weakness of the Grecian empire, than to the strength of the Persians; and so effectually did the intestine broils, which arose chiefly on account of religion, weaken the kingdom of Persia, that the most considerable part of it was annexed by the khalif Omar to his dominions.

As the Greeks and Persians were then in a languishing situation, so the Arabs were strong and flourishing. Their country had been peopled at the expence of the Grecian empire; whence the violent proceedings of the different religious sectaries forced many to take refuge in Arabia. The Arabs were not only a populous nation, but unacquainted with the luxuries and delicacies of the Greeks and Persians. They were inured to hardships of all kinds, and consequently much better fitted than their effeminate neighbours to endure the fatigues of war, as the event very fully verified.

²³ Mahomet's birth, descent, &c.

Mahomet was born in the year of Christ 569. According to the Eastern historians, he was descended in a direct line from Ishmael. Kedar, or, as the Arabians call him *Kidâr*, after his father Ishmael's death, communicated his name to the greatest part of Arabia Petraea. He was succeeded in his authority and possessions by his son Hamal; Hamal by Nabet, and Nabet by Salaman. After Salaman came Al Homeisa, then Al Yafa, whose son Odad was succeeded by Odd the father of Adnan. Counting ten generations forward in the same line, we come at last to Fehr, who seems to have distinguished himself by some glorious actions, as he was denominated *Koreish*, on account of his bravery. He is to be considered as the root of the politest and most celebrated tribe of the Arabs. He had three sons, Galeb, Mohâreb, and Al Hâreth. From Mohâreb the Banu Mohâreb, denominated likewise *Sheibân*, took their origin; from Al Hâreth, the Banu Al Kholoj; and from Galeb, in a direct line, the impostor Mahomet. Galeb was the father of Lowa; and he of Caab, whose son Morrah had for his immediate descendant Kelâb the father of Kosa. It was this Kosa who aggrandized

²⁴ Tahr head of the Koreish.

the tribe of the Koreish, by purchasing the keys of the Caaba from Abu Gabshan, as we have already related. By this he not only aggrandized his tribe, but became the prince of it himself. He was succeeded by his second son Abd Menâf, to whom the *prophetic light*, which is said to have manifested itself in his face, gave the right of primogeniture. Abd Menâf was succeeded by his son Amni, surnamed *Hâshem*, or "one that broke bread," on account of his singular generosity during a famine at Mecca. Having amassed great sums of money, he took a journey into Syria, where he purchased a vast quantity of meal, which he made into cakes and divided with his own hands amongst the people of Mecca. He likewise killed a prodigious number of camels, with which he fed them, and relieved them in the time of their distress; and finding that the soil about Mecca was so barren as to produce no fruits but what are common in the deserts, and consequently no corn or grain, which the Mecans are obliged to bring from other places, he appointed two caravans to set out yearly for that purpose, the one in summer, and the other in winter; by means of which, the city was amply supplied with provisions of all kinds. The provisions brought by them were distributed twice a-year; and Hâshem, by his prudent conduct, raised the glory of his people to the highest pitch; insomuch, that all the neighbouring great men and heads of tribes made their court to him. Nay, so great veneration is the memory of Hâshem held in by the Arabs, that from him the family of Mahomet among them are called *Hâshemites*; and he who presides over Mecca and Medina, who must always be of the race of Mahomet, has to this day the title of the "Chief or Prince of the Hâshemites."

Arabia.

²⁵ Hâshem's generosity.

Hâsham died at Gaza in Syria, and was succeeded by his son Abdal Motaleb or Mateleb. He is said to have been extremely affable and easy of access, as well as just and generous to a great degree; so that, in the beginning of the month *Ramadan*, he entertained the poor upon the flat roof of his house, and afterwards supplied the fowls of the air and wild beasts of the field with provisions of various kinds, which he ordered his servants to leave upon the summits of the neighbouring mountains. The well which God showed to Hagar in the wilderness is said to have been miraculously discovered to Abdal Motaleb, about 500 years after it had been filled up by Amru prince of the Jorhamites. This well is by the Arabs called *Zemzem*; which some derive from her calling to Ishmael, when she spied it, in the Egyptian tongue, *Zem, Zem*, i. e. Stay, Stay; though others ascribe it to a different origin. The water of this well, which is on the east side of the Caaba, and covered with a small building and cupola, is highly revered; being not only drunk with particular devotion by the pilgrims, but also sent in bottles as a great rarity to most parts of the Mahometan dominions.

²⁶ Well Zemzem discovered by Abdal Motaleb.

Abdalla the father of Mahomet, was a younger son of Abdal Motaleb, and remarkable for his beauty. In his 24th or 25th year, he married Amina, the daughter of Wâheb, the son of Abdal Menâf. She is represented as the most beautiful, prudent, and virtuous lady of her tribe; and consequently the most worthy of such an extraordinary person as Abdalla. He died young, and, in his father's life-time, left his widow and

Arabia.

27
Mahomet
at first a
merchant.

and infant son in very mean circumstances; his whole substance consisting only of five camels and one female Ethiopian slave. Abdal Motaleb was, therefore, obliged to take care of his grandson Mahomet; which he not only did during his life, but at his death enjoined his eldest son Abu Taleb to provide for him for the future. Abu Taleb was extremely kind to his nephew, and instructed him in the business of merchandise; for which purpose he took him into Syria when he was but 13 years of age, recommending him to Khadijah, a noble and rich widow, for her factor; in whose service he behaved so well, that she married him, and thus raised him to an equality with the richest in Mecca.

28
Begins to
broach his
doctrine.

Though Mahomet had probably formed a design of introducing his new religion pretty early, he did not think proper to avow it till the 40th year of his age. The grand article of his faith was, the unity of the divine nature, which he pretended was violated by the Jews and Christians no less than by the Pagans; for which reason, he resolved to make an attempt to rescue the world from the ignorance and superstition which prevailed at that time. This reformation he intended should begin in his own family; and therefore, having retired with his household to a cave in mount Hara, near Mecca, he there opened the secret of his mission to Khadijah: acquainting her that the angel Gabriel had just appeared to him, and told him that he was appointed the apostle of God. He also repeated to her a passage which he said had been revealed to him by the ministry of the angel, with an account of many prodigies which happened at his birth (See MAHOMET). This pretended revelation was received by Khadijah with the greatest joy; and in a kind of ecstasy she immediately communicated the good news to her cousin Waraka Ebn Nawfal, who, being a Christian, could write in the Hebrew character, and was pretty well versed in the Scriptures both of the Old and New Testament. He very readily came into her opinion, swore by God that what she said was true, and that "Mahomet was the great prophet foretold in the law by Moses the son of Amram."

29
Converts
his wife and
cousin, &c.

Mahomet finding his first step so successful, as Waraka was a very considerable person, began to entertain great hopes of accomplishing his design. He next converted his servant Zeid, to whom he gave his liberty on the occasion, which afterwards became a rule to his followers; and then Ali the son of Abu Taleb, though at that time only nine or ten years of age. This last, however, making no account of the other two, he used to call *the first of believers*. The next person he applied to was Abu Becr, a man of very considerable authority among the Koreish. He was easily gained over, and by his influence several others; so that Mahomet now made his mission no longer a secret. To Abu Becr he gave the name of *Al Saddik*, or *the faithful witness*; because he not only vouched for every thing he said, but also greatly increased the number of his followers. Mahomet likewise complimented him with the title of *Atik*, or *preserved*; intimating thereby that he was certainly saved from hell-fire.

Having given out that he was commanded from heaven to admonish his near relations, Mahomet directed Ali to prepare an entertainment, and invite to it the sons and descendants of Abdal Motaleb. He intended

to open his mind to them; but Abu Taleb, one of Mahomet's uncles, making the company break up before the prophet had an opportunity of speaking to them, he was obliged to invite them again the next day. Having now proposed the matter, he asked which of them would become his wazir, prime minister, or vicegerent. This was accepted by Ali; upon which Mahomet said to him, "This is my brother, my deputy, and my (*khalif*) successor, or vicar; therefore show yourselves submissive and obedient to him." At this speech all the company fell a-laughing, telling Abu Taleb that he must now pay obedience and submission to his own son. Notwithstanding this repulse, however, Mahomet was so far from being discouraged, that he began to preach to the people in public. They heard him with some patience till he began to upbraid them with the idolatry, obstinacy, and perverseness of themselves and their fathers; which so highly provoked them, that they openly declared themselves his enemies, except some few who were converted. The prophet was now protected by the authority of his uncle Abu Taleb; who, however, was earnestly solicited to persuade his nephew to desist, and at last threatened with an open rupture in case he could not prevail on him so to do. This had such an effect upon Abu Taleb, that he advised his nephew not to push the matter any farther; representing the great danger he and his followers would otherwise run; but our prophet was not to be so intimidated; and told his uncle plainly, that "if they set against him the sun on his right hand, and the moon on his left, he would not abandon his enterprise." Abu Taleb, therefore, finding him so firmly resolved, used no further arguments, but promised to stand by him to the utmost of his power: so that notwithstanding the people of his tribe came to a determination to expel both Mahomet and his followers, he found a powerful support in his uncle against all their machinations.

Mahomet now entered upon his apostolic function with uncommon diligence and application; and soon gained over his uncle Hamza, and Omar Ebn Al Khattah, a person very much esteemed, and who before had been his violent opposer. Notwithstanding this success, however, the Koreish continued their opposition, and came to a resolution to proscribe all who had embraced Mahomet's doctrine. In consequence of this resolution, the *Moslems*, as his followers were called, were now treated with such severity, that they found it no longer safe to continue in Mecca; nay, several of them in the fifth year of his mission found themselves obliged to fly into Ethiopia, where they were kindly received by the Najashi or king of that country, who refused to deliver them up to those whom the Koreish sent to demand them. At this refusal they were so exasperated, that they came to a resolution to suppress effectually the new religion which had now made a considerable progress. In order to this, they entered into a solemn league or covenant against the Hashemites, and the family of Abdal Motaleb in particular, engaging themselves to contract no marriages with them, nor to have any manner of communication with them otherwise; and, to give this the greater weight, they reduced it into writing, and laid it up in the Caaba. Upon this the tribe became divided into two factions; and all the family of Hashem, both Mos-

Arabia.

30
Rejected
by the Ko-
reish.

31
His resolu-
tion.

32
His follow-
ers perse-
cuted.

33
The Kore-
ish enter in-
to a league
against him.

Arabia.

lems and unbelievers, repaired to Abu Taleb as their head; except only Abdal Uzza, surnamed Abu Lahab, the son of Abdal Motaleb, who, out of hatred to his nephew and his doctrine, went over to the opposite party. After this the authority of Abu Taleb was scarce sufficient to protect Mahomet from the fury of the Koreish; who, according to Al Jannabi, made frequent attempts upon him; sometimes endeavouring to destroy him by force, at other times by secret wiles and machinations: nay, to compass their end, he tells us that they had recourse to magic, enchantments, and diabolical illusions. In short, they gave him at last so much trouble, that he was obliged to change his habitation, and seek a new asylum for himself and his companions. This he found in the house of one Orkam, which was advantageously situated on a hill called *Safa*. Here he converted Orkam's family, and the house was afterwards held in high estimation by the Moslems.

34
Their writing destroyed by a

The two factions into which the tribe of Koreish was divided, subsisted for five years, when they were put an end to by a very strange accident. Mahomet told his uncle Abu Taleb, that God had manifestly showed his disapprobation of the covenant entered into against them, by sending a worm to eat out every word of the instrument except the name of God. With this particular Abu Taleb immediately acquainted the Koreish; offering, in case it proved false, to deliver up his nephew to them; but if it should prove true, he insisted that they ought to lay aside their animosity, and annul the league they had made against the Hasheemites. To this they acquiesced; and going to inspect the writing, found it to be as Abu Taleb had told them; the words "In thy name, O God," being the only ones which remained. On so remarkable a proof of the divine displeasure, the league was immediately annulled, and all acts of hostility between the two parties ceased.

35
Mahomet still persecuted by the Koreish.

After this memorable event Mahomet remained with his uncle Abu Taleb, who survived the reconciliation only about eight months. The same year also died Khadijah, Mahomet's wife. Her death, as well as that of his uncle, proved a great detriment to his affairs; for the Koreish, notwithstanding the former reconciliation, began now to persecute him with more violence than ever. He was therefore obliged to fly for shelter to Al Tayef; which he chose on account of its being the residence of his uncle Al Abbas, whose protection he imagined he would be able to secure. In this, however, he found himself mistaken; and though he staid a month in the city, during which time he gained over a few, yet at last the lower sort of people rose against him and obliged him to return to Mecca. This refusal, though it greatly discouraged the new converts, did not in the least abate the zeal of Mahomet: on the contrary, he continued to preach boldly to the public assemblies at the pilgrimage to Mecca, exclaiming against idolatry, and particularly against the worship of two idols Allat and Al Uzza, to which the tribes, especially the women of that of Thakif, were very much addicted. By this the prophet was often exposed to great danger: however, he gained some converts, and amongst them six of the inhabitants of Yathreb, of the Jewish tribe of Khazraj; who, on their return home, failed not to speak much in commendation of their new religion, and exhorted their fellow-citizens imme-

diately to embrace it. These converts of the tribe of Khazraj are by the Arab writers called *Al Ansar*, *Al Ansarii*, or *Ansars*; that is, assistants, favourers, supporters, &c. because they assisted and supported the prophet when he was pursued to the very brink of destruction. They first met Mahomet on a little hill called *Al Akabah*, where a temple stood, and where they first took an oath to exert themselves in support of their new apostle and his religion. An uninterrupted friendship and harmony reigned for a long time amongst the members of the Jewish tribes of Khazraj, Koreidha, and Nadir, whose great progenitor, say the Arabs, was Aaron the son of Amran. Mahomet therefore insinuating himself into the good graces of the Ansars, they readily embraced his religion, and proved of very considerable service.

The next remarkable thing recorded of Mahomet is the invention of his night-journey to heaven. This he probably intended to supply the place of miracles. The absurdities contained in that relation, however, are so great, that when he related it to his uncle Al Abbas, and Omm Hanna the daughter of Abu Taleb, they endeavoured to dissuade him from making it public. This advice he was so far from following, that he related the whole to Abu Jahl, one of his most inveterate enemies, who ridiculed him for it, and placed the story in such a ridiculous light to the Koreish, that they were on the point of insulting him; several of his followers also left him; and the whole design had probably been ruined, had not Abu Becr vouched for his veracity, and declared, that, if Mahomet affirmed it to be true, he firmly believed the whole. This declaration not only retrieved the prophet's credit, but increased it to such a degree, that he was sure of making his disciples swallow whatever he pleased; and on this occasion it is said by some that he gave Abu Becr the name of the *faithful witness*, as we have already related.

In the twelfth year of Mahomet's mission, twelve men of Yathreb, or Medina, of whom ten were of the tribe of Kharai, and two of that of Aws, came to Mecca, and took an oath of fidelity to the prophet at the hill Al Akaba. When they had solemnly engaged to do all required of them, Mahomet sent one of his disciples, named *Masab Ebn Omair*, home with them, to instruct them more fully in the grounds of their new religion. Masab being arrived at Medina, with the assistance of the new proselytes, gained several others; and acquainting Mahomet with the success of his mission, desired leave to form a congregation of Moslems at Medina. This the prophet readily granted; in consequence of which, the new Moslems regularly assembled, to the number of forty persons, in the house of Saad Ebn Khaithama. The next year Masab returned to Mecca, accompanied by seventy-three men and two women of Medina, who had professed Mahometanism, besides several others who were yet unbelievers. On their arrival they sent immediately to Mahomet, and offered him their assistance, of which he now stood in the greatest need; for his adversaries were by this time grown so powerful in Mecca, that he could not stay there much longer without imminent danger. He therefore accepted their proposal, and met them one night by appointment at the hill Al Akaba. At this interview he was attended by his uncle

Arabia.

36
Ansars, who.

37
Mahomet's journey to heaven.

38
Almost proves the ruin of his cause.

39
Congregation of Moslems formed at Medina.

Al

Arabia.

Al Abbas, who, though then an unbeliever, wished his nephew well, and made a speech to the people of Medina; wherein he told them, that as Mahomet was obliged to quit his native city and seek an asylum elsewhere, and as they had offered him their protection, they would do well not to deceive him; and if they were not firmly resolved to defend, and not to betray him, they had better declare their minds, and let him seek for protection somewhere else. Upon their protesting their sincerity, Mahomet swore to be faithful to them, a part of the Koran being read to all present, on condition they should protect him against all insults, as heartily as they would do their own wives and families. They then asked him what recompence they were to expect if they should happen to be killed in his quarrel: he answered, Paradise; upon which they pledged their faith to him, after Mahomet had chosen twelve out of their number, who were to have the same authority under him that the twelve apostles had under Christ.

Finding now a confederacy formed in his favour, our prophet began to pull off the mask as to his true sentiments concerning the means of reformation. Hitherto he had propagated his religion by fair means only; and in several passages of the Koran, which he pretended were revealed before this time, he declared, that his business was only to preach and admonish; that he had no authority to compel any person; and that whether they believed or not, was none of his concern, but belonged solely to God. But no sooner did he find himself enabled, by the alliance abovementioned, to resist his enemies, than he gave out that God had allowed him and his followers to defend themselves; and at length, as his forces increased, he pretended not only to have leave to act on the defensive, but to attack the infidels, destroy idolatry, and set up the true religion by the power of the sword. To this he was excited by an apprehension that pacific measures would greatly retard, if not entirely overthrow, his designs; and therefore he determined to use the most violent methods to convert the Pagan Arabs, or rather to extend his own authority.

40
The Koreish resolve to put Mahomet to death.

The Koreish, in the mean time, finding that Mahomet had considerably extended his influence, and hearing of the league concluded with the Ansars, began to think it absolutely necessary that he should be prevented from escaping to Medina; and, in order to do this the more effectually, they resolved in a council, wherein it is said the devil assisted in person, to put an end to his life. To accomplish this with the greater safety, they agreed that a man should be chosen out of every tribe, and that each should have a blow at him; that so the guilt of his death might fall equally on all the tribes; and thus the Hashemites would be prevented from attempting to revenge the death of their kinsman, as they were much inferior in power to the rest of the tribes put together. Mahomet now directed his companions to repair to Medina, where, in consequence of the late treaty, they might be assured of protection. This they accordingly did: but he himself, with Abu Becr and Ali, remained behind; not having received, as he pretended, the divine permission to retire. Here he narrowly watched the motions of the Koreish, and was soon apprised of their machinations: for the abovementioned conspiracy was scarce formed, when by some

means or other it came to Mahomet's knowledge; and he gave out that it was revealed to him by the angel Gabriel, who also commanded him to retire from Mecca. The conspirators were already assembled at the prophet's door; but he, to amuse them, ordered Ali to lie down in his place, and wrap himself in his green cloak: this Ali complied with, and Mahomet miraculously, according to the Arabs, escaped to the house of Abu Becr. The conspirators, in the mean time, perceiving through a crevice Ali wrapped up in the green cloak, took him for Mahomet himself, and watched there till morning, when Ali arose, and they found themselves deceived. The prophet next retired in company with Abu Becr to a cave in mount Thaur, an hill a little south of Mecca. Here he had still a more narrow escape; concerning which we have the following account from an Arabic tradition. "The Koreish having detached a party from Mecca to reconnoitre the mouth of the cave, when they came there, found it covered by a spider's web, and a nest built at the entrance by two pigeons, which they saw, and which had laid two eggs therein. On sight of this they reasoned with themselves in the following manner: "If any person had lately entered this cavern, the eggs now before us would infallibly have been broke, and the spider's web demolished; there can therefore be no body in it:" after which they immediately retired. As the prophet, therefore, and his friend, were now saved so miraculously by means of the pigeon's eggs, and the interposition of the spider's web, he afterwards enjoined his followers, in memory of so remarkable an event, to look upon pigeons as a kind of sacred animals, and never to kill a spider."

Arabia.

41
He outwits them and escapes.

42
In great danger at mount Thaur.

The prophet and Abu Becr having staid in this cave three days in order to recover a little from their consternation, set out for Medina; but the Koreish, being informed of the route they had taken, sent a party after them, under the command of Soraka Ebn Malec. These overtook them; and, as the Arab historians tell us, Soraka's horse fell down when he attempted to seize Mahomet. Upon this he recommended himself to the prophet's prayers, and remounted his horse without hurt: but, as he still continued the pursuit, his horse fell down with him a second time; upon which he returned to Mecca, without offering any farther violence: and Mahomet, thus happily delivered from the greatest dangers, arrived without farther molestation at Medina, where he was received with the greatest demonstrations of joy.—This flight of the prophet from Mecca to Medina was reckoned so remarkable by the Moslems, that they made it the era from whence all their remarkable transactions were dated, calling it the *Era of the Hegira*, or *flight*. The beginning of the Hegira corresponded with the 16th of July, A. D. 622.

43
He is pursued and overtaken, but still escapes.

44
Era of the Hegira.

On Mahomet's arrival at Mecca, his first care was to build a mosque for his religious worship, and an house for himself. The city of Medina at that time was inhabited partly by Jews and partly by heretical Christians, that formed two factions which persecuted one another with great violence. This gave the impostor such an opportunity of propagating his new religion, that in a short time the city was entirely at his devotion. Here he strengthened himself by marrying Aysha the daughter of Abu Becr, though then only seven years of age, and gave his own daughter Fatima in marriage to Ali,

Arabia.
45
Union of
the Ansars
and Moha-
jerin.

the son of Abu Taleb. The next point he had in view was the union of the Mohajerin, or those who fled from Mecca on account of their religion, with the Ansars above mentioned. To facilitate this, after his mosque and house were finished, he established among the Moslems a fraternity, the principal statute of which was, that they should not only treat one another like brethren, but likewise most cordially love, and mutually cherish, one another to the utmost of their power. But, lest even this should prove insufficient, he coupled the individuals of the two bodies of Ansars and Mohajerin; and this was the last transaction of the first year of the Hegira.

The next year was ushered in, according to Abulfe-da, with a change of the *Kebla*, or place whither the Mahometans were to turn their faces in prayer. At first it had been declared to be perfectly indifferent where they turned their faces. Afterwards he directed them to pray with their faces towards the temple of Jerusalem, probably with a view to ingratiate himself with the Jews; and now, in order to gain the Pagan Arabs, he ordered his followers to pray with their faces towards the east. This inconstancy gave great offence, and occasioned the apostacy of many of his disciples. About this time Mahomet receiving advice that a rich caravan of the Koreish was on the road from Syria to Mecca, he detached his uncle Hamza, at the head of 30 horse, to seize upon it; who accordingly laid in wait for it in one of the woods of Yamama, thro' which it was to pass; here, however, he was informed that the caravan was guarded by 300 men, so that he returned without making any attempt; but the prophet made the proper dispositions for acting hereafter against the Koreish with success. This year also Mahomet sent out a party of 60 or 80 horse, all Mohajerin, except one who was an Ansar, to make reprisals on the Koreish. They were met by a party of their enemies, and both sides immediately prepared for an engagement: however, they parted without bloodshed, except one of the Koreish, who was killed by an arrow shot by one of the Moslems.

46
Mahomet
takes a ca-
ravan, and
gains the
battle of
Bedr.

Mahomet having now put himself into an offensive posture, began in earnest to make reprisals on the Koreish. His first exploit was the taking of a caravan attended by a small guard; and this being accomplished by a party consisting only of nine men, contributed greatly to encourage the Moslems. But what most established the impostor's affairs, and was indeed the true foundation of all his future greatness, was his gaining the battle of *Bedr*; of which we have the following account. — The prophet being informed that Abu Sofian Ebn Harb escorted a caravan of the Koreish with only 30 or 40 men, resolved to advance at the head of a small detachment of his troops to intercept it. To this he was excited by the riches of the caravan, which consisted of a large quantity of merchandize, consisting of the riches of Syria, carried on the backs of a thousand camels. He therefore sent out a party to reconnoitre it, with orders to wait in some convenient place, where they might remain undiscovered. But Abu Sofian having notice of Mahomet's motions, dispatched a courier to Mecca, requesting succours from his countrymen, that he might be able to defend the caravan. Upon this Mahomet drew together all his forces, which amounted to no more than

313, while his enemies consisted of very near 1000, Abu Sofian having been reinforced by the Meccans with 950 men. The two armies did not long remain in a state of inaction: but before the battle three champions from each party engaged each other in single combat. In this the Moslem champions were victorious, and the event greatly discouraged the Koreish. Mahomet, in the mean time, taking advantage of this lucky event, offered up his prayers to God with great fervency and vehemence; after which, feigning himself in a trance, he pretended that God had assured him of victory. Then throwing an handful of dust or gravel towards the enemy, he cried out, "May the faces of them be confounded;" and attacked the Koreish with such bravery, that they were soon put to flight, leaving 70 dead on the spot, and having as many taken prisoners. The loss on Mahomet's side was only 14 men, and among the prisoners was Al Abbas the prophet's uncle.

Though this action may seem of little consequence in itself, it was of very great advantage to Mahomet's affairs at that time. He was immediately treated with the highest respect by the Najashi, or king of Ethiopia, who received a particular account of the victory soon after it was gained; while the superstitious Moslems did not fail to look upon it as an evident declaration of heaven in their favour. Nay, notwithstanding the small number of enemies to be overcome, and who were only mortal men, these ignorant bigots did not hesitate to own the assistance of no less than 4000 angels, who, according to them, rode on black and white horses, having on their heads white and yellow sashes, that hung down between their shoulders!

Notwithstanding this disaster, however, Abu Sofian made a pretty good retreat, and conducted the greatest part of the caravan to Mecca. This chagrined the Moslems, though they found great spoil on the field of battle; the division of which had likely to have proved fatal to their cause, by the quarrels that it occasioned among them. So, hot, indeed, were the disputes on this occasion, that the impostor was obliged to pretend an immediate revelation from heaven, empowering him to retain a fifth part for religious purposes, and to distribute the rest equally. This became a law for his successors; but, with regard to himself, the prophet often took the liberty of infringing it; for which, no doubt, a new revelation was always a ready and convenient salvo. As for those who were slain on Mahomet's part in this battle, they were all looked upon by the Moslems as martyrs; and the prophet perceiving among the prisoners two of his inveterate enemies, immediately caused their heads to be struck off.

The Koreish, in order to be revenged on Mahomet for their late defeat at Bedr, sent Amru Ebn Al As, who afterwards conquered Egypt, with some other of their principal people, on an embassy to the king of Ethiopia, in order to interest him in their quarrel. To do this the more effectually, they accused Mahomet and his followers of speaking disrespectfully of Jesus and of his mother MARY; which accusation they hoped would likewise induce him to deliver up the Moslem refugees that were then at his court. But the bad success that had attended the arms of the Koreish hitherto, joined to the excuses made by the refugees, not only hindered the Najashi from delivering them up, but

Arabia.

47
His law
concerning
the division
of spoils.

Arabia.

but also prompted him to dismiss the ambassadors, and return the presents they had brought him. In the mean time, Abu Sofian, who had sworn never to use perfumes or enjoy women till he had another battle with Mahomet, set out from Mecca with a body of 200 horse. He advanced to a post within three miles of Medina; from whence he sent a detachment, who burnt a barn, together with a man in it that was winnowing wheat. Mahomet, being informed of this outrage, moved immediately towards him with a detachment of cavalry; but Abu Sofian was so intimidated by his approach, that he fled with precipitation, leaving behind him all the sacks of flour or meal that had been brought for the subsistence of his troops. Instead therefore of coming to an engagement with the impostor, as he had sworn, he contented himself with alarming the country, and pillaging such as he suspected of favouring Mahometanism.—This year also Mahomet conquered the tribes called *Bana Solaim*, *Ghatfan*, and the *Banu Kainoka*; plundering likewise a rich caravan belonging to the Koreish, and acquiring from thence 25,000 dirhems for his own share of the plunder.

In the year of Christ 625, being the third of the Hégira, the Koreish assembled an army of 3000 men, among whom were 200 horse and 700 armed with coats of mail. The command of this army was given to Abu Sofian, who was attended by his wife Henda Bint Otba, and sat down at a village about six miles distant from Medina. Mahomet, being much inferior to the enemy, resolved at first to keep himself within the town, and receive them there; but afterwards, by the advice of his companions, marched out against them at the head of 1000 according to some, 1050 according to others, or, as some say, only 900 men. Of these 200 were cuirassiers; but he had only one horse besides his own in the whole army. He distributed three standards among his troops; of which one was given to the tribe of Aws, another to that of Khazraj, and the third to the Mohajerin. The grand standard was carried before the prophet by Mosaab Ebn Omair. With these forces Mahomet formed a camp in a village near Ohod, a mountain about four miles north of Medina, which he contrived to have on his back; and the better to secure his men from being surrounded, he placed 50 archers, the flower of his troops, in the rear, with strict orders not to quit their post. On the other hand, the army of the Koreish was drawn up in the form of a crescent, and made a very good appearance. The right wing was commanded by Khaled Ebn Al Walid, afterwards so terrible to the Greeks; the left by Acrema Ebn Abu Jahl; and the centre by Abu Sofian. The corps de reserve was headed by Abu Sofian's wife, accompanied by 15 other matrons, who performed the office of drummers, lamenting the fate of their countrymen slain at Bedr, in order to animate the troops who attended them. The attack was begun by the Moslems, who fell upon the enemy with such fury, that their centre immediately began to give way. Ali, or, according to Abulfeda, Hamza, slew Artta the enemy's great standard-bearer; which struck them with such terror, that they soon betook themselves to flight, falling foul upon their own corps de reserve. Victory had now been no longer doubtful, notwithstanding the vast inferiori-

ty of Mahomet's troops, had not the 50 archers, contrary to the prophet's express command, quitted their post to pillage the enemy. Upon this Khaled, perceiving the Moslem army to be greatly exposed, attacked them in the rear with such bravery, that he turned the fortune of the day. Not content with putting the troops there in disorder, he cried out with all his might, "Mahomet is slain;" and this had such an effect upon the Moslems, that they immediately took to their heels, nor could the utmost endeavours of the prophet himself afterwards rally them. He therefore found himself obliged to quit the field of battle; in doing which he was very near losing his life, being struck down by a shower of stones, and wounded in the face by two arrows, which occasioned the loss of two of his fore-teeth. He likewise received a contusion on his upper-lip; and had even been killed on the spot, had not one of his companions, named *Telha*, Abu Becr's nephew, received a blow that was levelled at him. On this occasion Telha received a wound in his hand, which deprived him ever after of the use of some of his fingers. Of the Moslems 70 were slain; among whom were Hamza the prophet's uncle, and Mosaab the standard-bearer. Amongst the wounded were Abu Becr, Omar, and Othman; but as soon as they understood that the prophet was safe, they returned to the charge with a considerable body, and, after an obstinate dispute, carried him off. The good retreat made by these champions so discouraged the troops of Abu Sofian, that they did not pursue the flying enemy, but contented themselves with remaining masters of the field of battle; nor did that general, tho' he exulted not a little in his victory, make any farther use of it than to give Mahomet a challenge to meet him the next year at Bedr, which was accepted; and after his return to Mecca, he desired a truce with the Moslems, which was readily granted.

This defeat had like to have proved the total ruin of the impostor's affairs, and must inevitably have done so had the conquerors made the least use of their victory. Some of his followers now asserted, that had he been really a prophet sent from God, he could not have been thus defeated; and others were exasperated on account of the loss of their friends and relations who had been slain in the late engagement. To still the murmurs of the former, he laid the blame on the sins of those who had accompanied him; and, to pacify the latter, he pretended a revelation from heaven, wherein the period of all mens lives was said to be unalterably fixed without regard to their own actions, or to any external objects; so that those who were killed in battle behaved to have died, though they had remained at home in their own houses. By the assistance of this last doctrine he encouraged his followers to fight, without fear, for the propagation of their faith, as all their caution would not be sufficient to avert their destiny, or prolong their lives even for a single moment.

The next year (A. D. 626.), Mahomet, besides several other less considerable successes, reduced a fortress belonging to the Jewish tribe of Al Nadir, who had revolted on account of the defeat at Ohod: on this occasion, by an express revelation, as he pretended, he kept the whole booty to himself; and, about the same time, forbade his followers the use of wine, or to play at games of chance, on account of the disturbances and quarrels

Arabia.

50
Mahomet
defeated.51
He apolo-
gizes for
his defeat.48
Abu Sofian's
cowardice.49
Battle of
Ohod.

Arabia.

52
Siege of
Medina.

quarrels which were likely to be excited by that means among them. This year also he marched with a body of infantry to Bedr, to meet Abu Sofian, as he had promised the year before : but that general's heart failing him, he returned home without facing the prophet; and this piece of cowardice the Moslems did not fail to impute to a terror sent immediately from God. The year following, however, the Koreish, in conjunction with the tribe of Ghatfan, and the Jews of Al Nadir and Koreidha, assembled an army of 12,000 men, with which they formed the siege of Medina; thus threatening the impostor and all his followers with utter destruction at once. On the enemy's approach, Mahomet, by the advice of a Persian named *Salman*, ordered a deep ditch to be dug round the city, and went out to defend it with 3000 men. The Arabs having invested the town, both sides remained in a state of inactivity for some time; which was so well employed by the impostor, that he found means to corrupt some of the leading men in the enemy's camp. The good effects of this soon appeared; for a champion having advanced to the Moslem entrenchments, and challenged the best man in their army to fight him in single combat, the challenge was immediately accepted by Ali, who slew him and another that came to his assistance; after which, those who had been corrupted by Mahomet's agents so soured a considerable part of the forces, that they deserted their camp; upon which all the rest were obliged to raise the siege and return home.

53
The siege
raised.

The prophet, being now happily delivered from the most powerful combination that had ever been formed against him, was visited by the angel Gabriel; who asked him, whether he had suffered his men to lay down their arms, when the angels had not laid down theirs? ordering him at the same time to go immediately against the tribe of Koreidha, and assuring him that he himself would lead the way. Upon this Mahomet immediately set out for the fortrefs of the Koreidhites, and pushed on the siege with so much vigour, that tho' it was deemed impregnable, he obliged the garrison to capitulate in twenty-five days. The Koreidhites, not daring to trust themselves to the impostor's mercy, surrendered at discretion to Saad Ebn Moadh, prince of the tribe of Aws, hoping that he, being one of their old friends and confederates, would have some regard for them. Here, however, they found themselves disappointed; for Saad, being highly provoked at them for assisting the Koreish while in league with Mahomet, ordered the men to be put to the sword, the women and children made slaves, and their goods divided among the Moslems. This sentence was no sooner heard by Mahomet, than he cried out that Saad had pronounced the sentence of God; and, in consequence of this decision, ordered the men, to the number of 600 or 700, to be immediately massacred. The women and children were also carried into captivity. Their immoveable possessions were given to the Mohajerin, and the goods divided equally.

54
Koreid-
hites mas-
sacred.

Mahomet now continued to be successful, gradually reducing the Arab tribes one after another. In 628, he sent an agent to Constantinople, desiring leave of the Greek emperor to trade with his subjects; which was immediately granted. The same year also he concluded a piece for ten years with the inhabitants of Mecca, and obtained liberty the next year to perform his devo-

tions at the Caaba. What tended considerably to bring about this pacification was an account brought to the Koreish by one whom they had sent with an actual defiance to Mahomet, of the prodigious veneration which his followers had for him. This messenger acquainted them that he had been at the courts both of the Roman emperors and of the kings of Persia, but never saw any prince so highly respected as Mahomet was by his companions. Whenever he made the ablution, in order to say his prayers, they ran and caught the water which he had used; whenever he spit, they licked it up, and gathered up every hair that fell from him, with great veneration. This intimated how desperately they would fight in his defence, and probably inclined his enemies to avoid hostilities. In 629, the impostor began to think of propagating his religion beyond the bounds of Arabia, and sent messengers to several neighbouring princes to invite them to embrace Mahometanism; but, before sending the letters, he caused a silver seal to be made, on which were engraved, in three lines, the following words, "MAHOMET THE APOSTLE OF GOD." This seal, he believed, would procure the letters to which it was affixed a more favourable reception at the courts of those princes whither they were directed. The first to whom he applied was Khofru Parviz the king of Persia; but he, finding that Mahomet had put his own name before his, tore the letter in pieces, and sent away the messenger very abruptly. He also sent a letter to the same purpose to Constantinople; but though the emperor Heraclius dismissed his messengers honourably, he refused to abandon the Christian faith. Besides these, he wrote five other letters, which he distributed among those who he thought would be most likely to acknowledge him for an apostle. However, we do not hear that by means of letters he ever introduced his religion into a foreign country.— But while our impostor was thus going on in the full career of success, and industriously propagating his infamous falsehoods by all the means he could think of, he was poisoned by a maid, who wanted, as she said, to make an experiment whether he was a prophet or not. This was done by communicating some poison to a shoulder of mutton, of which one of his companions named *Basbar Ebn Al Bara*, eating heartily, died upon the spot; and Mahomet himself, though he recovered a little, and lived three years after, yet never enjoyed perfect health. Notwithstanding this misfortune, however, he still continued his enterprizes. The year 630 proved remarkably fortunate. It was ushered in by the conversion of Khalid Ebn Al Walid, Amru Ebn Al As, and Othman Ebn Telha, three of the most considerable persons among the Koreish; and this soon enabled him to become master of the whole peninsula of Arabia. This year also the inhabitants of Mecca took it into their heads to violate the treaty concluded with Mahomet; for the tribe of Becr, who were the confederates of the Koreish, attacking those of Khozaab, who were in alliance with Mahomet, massacred 20 of them, and afterwards retired; being supported in this action by a party of the Koreish themselves.— The consequence of this violation was soon apprehended; and Abu Sofian himself made a journey to Medina, in order to heal the breach and renew the truce: but in vain; for Mahomet, glad of this opportunity, refused to see him. Upon this he applied to Abu Becr, Ali, Omar,

Arabia.

55
Prodigious
veneration
for Maho-
met.56
He invites
foreign
princes to
embrace
his reli-
gion.57
Is poison-
ed, but re-
covers.58
Meccans
violate the
treaty with
Mahomet.

Arabia.

Omar, and Fatima, to intercede for their countrymen with the prophet; but some of these giving him rough answers and others none at all, he was obliged to return to Mecca as he came. Mahomet immediately gave orders for the necessary preparations, that he might surprise the Meccans, who were by no means in a condition to receive him; but Hateb Ebn Abu Baltaa, hitherto a faithful Moslem, attempted to give them notice of their danger by a letter, though without effect. His letter was intercepted: and he alleged in his excuse, that the only reason he had for his conduct was to induce the Koreish to treat his family with kindness. This excuse the prophet accepted, as he had greatly distinguished himself at the battle of Bedr, but strictly forbade any such practices for the future; which having done, he immediately made the necessary dispositions for setting forward.

Mahomet's army, on this occasion, was composed of Mohajerin, Ansars, and other Arabs, who had lately become profelytes. As they drew near to Mecca, he set up his standards, and advanced in order of battle to Mar Al Dharan, a place about four parasangs from Mecca, where the whole army encamped. Here he ordered 10,000 fires to be lighted, and committed the defence of the camp to Omar, who cut off all communication with the town, so that the Meccans could receive no certain advice of their approach. Among others that came from Mecca to reconnoitre the Moslem camp, Abu Sofian Ebn Harb, Hakem Ebn Hezam, and Bodail Ebn Warka, fell into Omar's hands; and being conducted to Mahomet, were obliged to embrace Mahometanism in order to save their lives.

The first rumour of this expedition had not a little terrified the Koreish, though they were not apprized that the prophet had resolved upon a war; but perceiving now, upon the report of Abu Sofian, who had been sent back to them, that the enemy was at their gates, they were thrown into the utmost consternation. Of this Mahomet being informed, he resolved to take advantage of the confusion that then reigned among them. He therefore first dispatched Hakem and Bodail to the Meccans, inviting them to take an oath of allegiance to him, and become converts to his new religion; after which, he made the following disposition of his forces. Al Zobier was ordered to advance with a detachment towards the town on the side of mount Cada. Saad Ebn Obad, prince of the tribe Khazraj, marched by his order with another detachment towards the height of Coda, which commands the plain of Mecca. Ali commanded the left wing of the army, consisting of Ansars and Mohajerin. The prophet put into his hands the great standard of Mahometanism, with orders to post himself upon mount Al Hajun, and to plant the standard there; strictly enjoining him, however, not to stir from thence till he himself arrived, and till a proper signal should be given him from Saad for that purpose. Khaled led the right wing, consisting of the Arabs lately converted, with which he was to possess himself of the plain of Mecca. Abu Obeidah commanded in the centre, which consisted entirely of infantry: the prophet himself remained in the rear, from whence he could most easily dispatch his orders to all the generals as occasion should require. He expressly prohibited Khaled and all his other officers to act offensively unless they were first attacked. Things being

in this situation, the army upon a signal given put itself immediately in motion. The prophet mounted his camel with great alacrity, and was that day cloathed in red. Al Zobier pursued the route assigned him without opposition; nor did Saad discover the faintest traces of an enemy: Ali took possession of his post without the loss of a man; and in like manner Abu Obeidah seized on the suburbs. Khaled, however, in his march to the plain, was met by a large body of the Koreish and their confederates, whom he immediately attacked and defeated, putting 28 of them to the sword. Not content with this, he pursued them into the town, and massacred a great number of the inhabitants; which so terrified the rest, that some shut themselves up in their houses, while others fled different ways in order to avoid the fury of the merciless and impious tyrant, who was now become master of the city. Thus was Mecca reduced, with the loss only of two men on the side of the impostor.

Mahomet being now master of the city, made his public entry into it exactly at sun-rising. When the first tumult was over, he went in procession round the Caaba seven times, touching the corner of the black stone with the staff in his hand, as often as he passed it, with great devotion. Then he entered the Caaba; where observing several idols in the form of angels, and the statues of Abraham and Ishmael, with the arrows of divination in their hands, he caused them all to be destroyed. He also broke in pieces with his own hands a wooden pigeon, that had long been esteemed a deity by the idolatrous Koreish. Afterwards entering into the interior part of the Caaba, he repeated with a loud voice the form used at this day by the Mahometans, "Allah Akbar, God is great," &c. turning towards every part of the temple. Then he prayed between the two pillars there, with two inclinations, as well as without the Caaba; saying to those that attended him, "This is your Kebla, or the place towards which you are to turn your faces in prayer."

Having thus effectually subdued the Koreish, put an end to all commotions, and purged the Caaba of 360 idols, the prophet's next care was to ingratiate himself with the people. Sending therefore for some of the principal of them, he asked them what kind of treatment they expected from him, now he had conquered them? To this they replied, "None but what is favourable, O generous brother:" upon which he dismissed them, telling them they were from that moment a free people. After this, pretending a new revelation, he restored the keys of the Caaba to Othman Ebn Telha, who was in possession of them before; and who was now so much affected by this piece of justice, that he immediately became a profelyte. Next day the prophet declared Mecca an asylum, and publicly gave out that he would maintain to the utmost of his power the inviolable security of the place. He then was solemnly inaugurated; after which he proscribed, according to some, six men and four women, according to others, eleven men and one woman; but of these only three men and one woman were put to death; the rest being pardoned on their embracing Mahometanism, and one woman making her escape. The remainder of this year was spent in various expeditions against different tribes of the Arabs, which were in general attended with success.

Arabia.

59
Mecca taken.

The

Arabia.

60
Mahomet
dies.61
Great con-
fusion on
his death.

The ninth year of the Hegira, being that of Christ 631, is called by the Mahometans the year of *Embassies*; for the Arabs, who had hitherto been expecting the issue of the war between Mahomet and the Koreish, no sooner saw that which was the most considerable of the whole submit to him, than they began to come in to him in great numbers, and to send embassies to make their submissions to him, both while at Mecca and after his return to Medina, whither he had returned soon after the taking of Mecca: and thus good fortune continued without interruption to the year 632, when this famous impostor breathed his last, having just reduced under his subjection the whole peninsula of Arabia, and being ready to break into the neighbouring kingdoms in order to satisfy his ambition.

The death of Mahomet occasioned such a consternation in Mecca, that the governor hid himself, fearing to be called to an account for his former conduct; and the inhabitants, upon the first arrival of this melancholy news, considered themselves as destitute of all manner of protection. After the first impressions of their fear, however, were over, they began to meditate a revolt; but were prevented by one Sohail Ebn Amru, a principal man of the Koreish. The tumults at Medina, however, were not so easily appeased. The news of this sad event was no sooner published there, than a number of people assembled before his door, crying out, "How can our apostle be dead? Our intercessor, our mediator, has not entirely left us! He is taken up into heaven, as was Isa (Jesus); therefore he shall not be buried." This was confirmed by Omar; who drew his sword, and swore, that if any person affirmed Mahomet to be dead, he would cut off his hands and his feet. "The apostle of God (says he) is not dead: he is only gone for a season, as Moses the son of Amram was gone from the people of Israel for forty days, and then returned to them again." The populace therefore kept the body above ground, even after the belly began to swell; nor could the prophet's uncle Al Abbas, notwithstanding this, convince them to the contrary. Upon hearing of these transactions, Abu Becr immediately posted from Al Sonah, another quarter of the city, and expostulated with them in the following manner: "Do you worship Mahomet, or the god of Mahomet? If the latter, he is immortal, and liveth for ever; but if the former, you are in a manifest error, for he is certainly dead." The truth of this assertion he immediately evinced from several passages of the Koran, in so clear and conclusive a manner, that he not only satisfied Omar, but calmed the minds of all the people.

The prophet having left no directions concerning a successor, very warm disputes arose between the Mohajerin and the Ansars about the right of electing a khalif. The former insisted on having that right, because they had attended Mahomet in his flight to Medina; and the others, because they had supported him when expelled from his native city, &c. In short, the disputes became so hot, that an open rupture must have commenced, had not they been terminated by a proposal that each party should choose a khalif. This amused them a little for the present; but not proving perfectly agreeable to the Mohajerin, Abu Becr proposed two persons, Omar and Abu Obeidah, offering to swear allegiance to him on whom the suffrages of both parties should fall. But this producing no decision, Omar

swore fealty to Abu Becr, and his example was followed by all the Moslems on the spot; upon which he was acknowledged both by the Mohajerin and Ansars as the rightful successor of Mahomet.

These transactions, however, were not at all agreeable to Ali, who, as son-in-law to the prophet, had undoubtedly the best title to the succession. He expostulated with Abu Becr about the manner of his election, which had been effected without his knowledge; and received for answer, that the exigence of affairs would not admit of deliberation; and that, had not the election been so sudden, the opposite party would have wrested the power entirely out of their hands. Ali was in Fatima's apartment when Abu Becr had the good luck to be elected khalif; and, upon the arrival of the news, expressed great dissatisfaction. He found himself, however, soon obliged to change his note, when the new khalif sent Omar with orders to burn the house where he and his friends were assembled, in case he did not concur in supporting the election. But notwithstanding his forced compliance on this occasion, it is not to be doubted that he reckoned himself injured; and his pretensions were thought to be just by a great number of Moslems: which notion is entertained by a very considerable party of Mahometans even at this day; and these are called *Shiites* or *sectaries*.

Soon after Abu Becr's accession, many of the Arabs refused to pay the tribute imposed upon them by Mahomet, and even attempted to shake off his yoke altogether. This so alarmed the khalif and his subjects at Medina, that, fearing a general revolt, they sent all not able to bear arms into the cavities of the rocks and mountains, and put themselves in as good a posture of defence as the short time would permit. In the mean time Khaled was dispatched with an army of 4500 men to reduce the rebels; and he soon coming up with them, gave them a total defeat, brought off a vast quantity of plunder, and made many of their children slaves. Nor was he content with this; for being sent by Abu Becr to Malec Ebn Noweirah, an eminent person among the Arabs, and famous for his skill in poetry as well as his horsemanship and bravery, to bring him over by fair means, he immediately ordered his head to be cut off. By this means, indeed, he extinguished all the remains of rebellion; but rendered himself exceedingly obnoxious to Abu Becr, who would have put him to death, had not Omar strongly interceded for him: for Khaled had greatly exceeded his commission, as Malec had returned to Mahometanism, and had offered to pay the money. This was not, however, the only piece of service Khaled performed at this time; he also defeated and killed Moseilama, who had set up for a prophet in the time of Mahomet, and even wanted to take the grand impostor himself into company with him. The same general likewise defeated and dispersed the troops of another prophet, called *Toleiah Ebn Khowailed*, obliging himself to remain concealed till after the death of Abu Becr. About the same time another body of rebels committed great disorders in the province of Bahrein. Against these Abu Becr dispatched Al Ola at the head of a considerable army, who soon obliged them to return to Mahometanism; having put great numbers of them to the sword, and plundered their country in a dreadful manner.

Abu Becr having now no enemy to contend with in

Arabia.

62
Abu Becr
succeeds
him.63
Ali dissatis-
fied.64
Rebellions
extinguish-
ed by Kha-
led.65
War with
the Greeks.
Arabia,

Arabia.

Arabia, and being free from all apprehensions of a competitor, resolved next to turn his arms against the Greek emperor. Some skirmishes had happened, in the time of Mahomet, between the Moslems and Greeks; in one of which Zeid, a Moslem commander, had been killed. To revenge his death, his son Osama was on the point of making an irruption into Syria at the time of Mahomet's decease. This enterprise the khalif ordered him to go on with; and it was executed by Osama with great success. He entered Syria, and laid waste the country, doing the Greeks a good deal of damage; after which he returned to Arabia without any considerable loss.

66
Kingdom
of Hira de-
stroyed.

Soon after the khalif sent Khaled at the head of a powerful army to invade Irak, and put an end to the kingdom of Hira. In this undertaking he was attended with his usual success. The king Al Mondar Al Maghrur lost his life in defence of his dominions; and the kingdom was totally destroyed, after it had continued 622 years and eight months, as we have already hinted. The inhabitants became tributaries; and, according to Eutychius, the tribute collected on this occasion amounted to 70,000 pieces of money. This, according to Al Makin, was the first tribute-money ever brought to Medina.

The exigence of the khalif's affairs in Syria, however, did not suffer Khaled long to remain in Irak. Before the departure of the army under his command, Abu Becr had come to a resolution to invade Syria; and finding his design approved by the principal officers of his court, he sent circular letters to the petty princes of Yaman, the chief men of Mecca, &c. informing them of his intention to take Syria out of the hands of the infidels; acquainting them, at the same time, that a war for the propagation of the true religion was an act of obedience to God. To these letters they paid a proper regard; and in a very short time appeared at Medina at the head of their respective troops, and pitched their tents round the city. Here they staid till the Moslem army destined to act against the emperor was completely formed, and in a capacity to begin its march. The khalif having viewed the troops from the top of an hill, and prayed to God for success, attended the generals a little way on foot. As the generals were on horseback, they could not forbear expressing their uneasiness at the khalif's thus demeaning himself; but he told them, that it signified little whether they walked on foot or rode, as they had all the same views, viz. the service of God, and the propagation of religion. At parting, he addressed Yezid Ebn Abu Sofian, whom he had invested with the supreme command, in the following manner: "Take care, Yezid Ebn Abu Sofian, to treat your men with tenderness and lenity. Consult with your officers on all pressing occasions, and encourage them to face the enemy with bravery and resolution. If you shall happen to be victorious, destroy neither old people, women, nor children. Cut down no palm-trees, nor burn any fields of corn. Spare all fruit-trees, and slay no cattle but such as you shall take for your own use. Adhere always inviolably to your engagements, and put none of the religious persons you shall meet with in monasteries to the sword. Offer no violence to the places they serve God in. As for those members of the synagogues of Satan *who shave their crowns*, cleave

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their skulls, and give them no quarter, except they embrace Islamism (Mahometanism), or pay tribute."

The Greek emperor was greatly alarmed at the approach of the Moslem army; however, he made all necessary preparations for his defence, and sent out a detachment to reconnoitre the enemy. These having fallen in with the Arabs, a battle ensued, in which the Greeks were defeated with the loss of 1200, while the Arabs lost only 120 men. This was succeeded by a great many skirmishes, in which the Moslems were generally victorious. The rich spoil taken on these occasions was sent as a present to the khalif; who having acquainted the inhabitants of Mecca with his good success, they were thereby so elated, that they furnished him with a strong reinforcement, which was immediately ordered into Syria. The Greek emperor, in the mean time, having ordered another body of his troops to advance towards the frontiers, they found an opportunity of engaging the Moslem army under Abu Obeidah, a person of great piety, but little experience in war. Him they totally defeated; and Abu Becr was so much provoked at his defeat, that he deprived him of the command, which was given to Khaled, who was for this purpose recalled from Irak. That general's first exploit was the reduction of Bosra, a very rich and populous city of Syria Damascena; which, however, he accomplished by treachery rather than by force of arms. Having left a garrison of 400 men in Bosra, and being joined by Abu Obeidah's forces, he laid siege to Damascus with an army of 45,000 men. This so alarmed the emperor, that he dispatched an army of 100,000 men, commanded by one Werdan, to the relief of that city. Khaled, on hearing of the approach of this formidable army, was for marching immediately with all his forces, and giving them battle; but this was opposed by Obeidah, as it would enable the inhabitants of Damascus to procure fresh supplies both of arms and provisions, and consequently render the reduction of the place more difficult. It was, therefore, at last agreed, that a body of troops should be detached under Derar Ebn Al Wazar, an excellent officer, and an implacable enemy to the Christians (as indeed were all the Moslem generals except Abu Obeidah), to fight the enemy, whilst the siege was carried on by the two generals.

Khaled, fearing lest Derar's furious zeal and hatred to the Christians should prove fatal to his troops, told him before his departure, that though they were commanded to fight for the propagation of their religion, yet they were not allowed to throw away the lives of their men; and therefore ordered him to retire to the main body of the army, in case he found himself pressed by a superior force. But Derar, deaf to this salutary admonition, with his small body of troops rushed upon the whole Christian army, notwithstanding the vast disproportion of numbers. He charged them, however, with such bravery, that he penetrated to the spot where the general gave his orders, killed the standard-bearer, and carried off the standard itself, in which was a cross richly adorned with precious stones. Nay, he would in all probability have put Werdan's army to flight, had not that general's son, the commandant of Hems, arrived in the heat of the engagement with a body of 10,000 men; with which he attacked the Moslems so briskly in the rear, that he forced them to retire, and

Arabia.

68
The Mos-
lems de-
feated.

69
Damascus
besieged.

70
The Greeks
defeated
with great
slaughter.

X

took

Arabia.

took Derar himself prisoner. This so discouraged them, that they would have taken to their heels, had not Rafi Ebn Omeirah animated them with the following words. "What! do not you know, that whoever turns his back upon his enemies offends God and his prophet? and that the prophet declared the gates of paradise should be open to none but such as fought for religion? Come on! I will go before you. If your captain be dead, or taken prisoner, yet your God is alive, and sees what you do." This exhortation had such an effect upon his troops, that, returning to the charge, they maintained their ground with unparalleled bravery, till Khaled arrived with a considerable body of infantry and 1000 horse. The arrival of this general soon turned the fortune of the day. A party of the imperial army went over to the Moslems, and the rest took to their heels. Derar also was retaken, and carried off in triumph. However, Werdan having collected the shattered remains of his forces, and received a reinforcement from the emperor, found his army still to amount to 70,000 men, with which he resolved to make another attempt for the relief of Damascus. They were attended with still worse success in this second attempt than they had been before; being utterly defeated, with the loss of 50,000 men, so that they were no more in a condition to attempt any thing; and, in consequence of this, the city was soon taken, notwithstanding the utmost efforts of the besieged.

71
The city
taken.

72
Abu Becri
dies, and is
succeeded
by Omar.

This disastrous event happened in the year 634; and the very day that Damascus was taken, Abu Becri died of a consumption in the 63d year of his age. He was succeeded by Omar, who was proclaimed khalif that very day; and the first title assigned him was, *The khalif of the khalif of the apostle of God*. But the Arabs, considering, that by the additions to be continually made at the accession of every new khalif, the title would become too long, they with one voice saluted him *Emperor of the believers*; which illustrious title descended afterwards to his successors by a kind of incontestable right.

The new khalif was no sooner settled than he replaced Abu Obeidah in the command of the army in Syria, being greatly displeased with the cruel and bloodthirsty disposition of Khaled. He also commanded Abu Obeidah to have an eye upon Palestine, and to invade it as soon as an opportunity offered. Khaled bore his disgrace with great magnanimity: and swore, that though he had always had the greatest regard for Abu Becri, and the utmost aversion to Omar, he would submit to God's will, and obey the new khalif as the lawful successor of Mahomet. The Moslem forces in the mean time having made all proper dispositions for improving the advantages they had gained, Abu Obeidah sent a detachment of 500 horse to a place called *Dair Abil Kodos*, about 30 miles from Damascus, to plunder the Christians there. In this place there lived a priest so eminent for his sanctity, that the neighbouring people of all ranks resorted to him for his blessing and instruction. When any person of distinction married, he took with him his new spouse, in order to receive this holy man's benediction. The fame of this priest's sanctity drew such numbers of people to that place every Easter, that a great fair was kept annually at his house, to which were brought vast quantities of the richest silks, plate, jewels, &c. When the Arabs

drew near to this place, to which they were conducted by a Christian, they were informed that the governor of Tripoli had married his daughter to a person of distinction, who had carried his lady to the above-mentioned priest. She was attended by a guard of 5000 men; besides which, the Jews, Greeks, Copts, and Armenians, at that time assembled about the monastery, amounted to 10,000. Notwithstanding this, the Moslem commander determined to carry off the lady; and having told his men, that they should either enjoy the riches of the Christians, or the pleasures of paradise, he commanded them to fall on the enemy. The impetuosity of these enthusiasts at first bore all down before them; but the Christians, perceiving they were but an handful of men, surrounded them on all sides, and resolved to make them pay dear for their temerity. But Abu Obeidah, being informed of their dangerous situation, immediately dispatched Khaled with a strong detachment to the relief of his distressed countrymen. The consequence of this was, that the Christians were entirely defeated, and the unhappy lady carried off, with 40 maids that waited upon her, as well as all the wealth brought to the above mentioned fair; among which were many rich garments curiously wrought, and in particular one adorned with the effigies of our Saviour. All these were sold for ten times their weight of gold to some of the opulent Arabs of Yaman. The young lady was given to Abdallah, who kept her to the reign of Yezid. Of this advantage Abu Obeidah sent notice to the khalif by a letter, in which he also acquainted him that some of his men had drunk wine. These delinquents, by the advice of Ali, had each of them 80 stripes bestowed upon the soles of their feet; after which, many others, who had never been suspected of drinking this prohibited liquor, made a voluntary confession, and received the same chastisement.

Arabia.

73
Governor
of Tripoli's
daughter
carried off.

74
Punishment
of
some soldiers
who
had drunk
wine.

The Moslem general next set about reducing the principal fortresses in Syria, and soon became master of Kinnisrin, Baalbec, Adestan, Shaizar, and Hems; on the news of which, the Greek emperor Heraclius, resolving if possible to put a stop to the cruel and unprovoked ravages of these barbarians, sent against them an army of 240,000 men, commanded by one Manuel, whom the Arabs call *Mahan*. But this vast multitude was utterly defeated by Khaled; upon whom Abu Obeidah conferred the supreme command, on account of his superior skill in military affairs. This battle was fought near a village called *Yermouk*; and, according to the Arabian historians, the Christians had 150,000 men killed and 40,000 taken prisoners, while the Moslems lost no more than 4030 men.

75
The Greeks
utterly de-
feated at
Yermouk.

The defeat of Yermouk was immediately followed by the loss of the whole province of Palestine. The reduction of Jerusalem was one of its first consequences; and Omar, being apprised of the success of his arms, immediately set out to visit that holy place, at the request, it is said, of the inhabitants. The khalif was attended in his journey by a numerous retinue, most of whom afterwards returned home. He rode upon a red camel, and carried with him two sacks, one of which contained a sort of provision consisting of barley, rice, or wheat, sodden and unhusked, and the other fruits. Before him he had a leather bottle, very necessary in these desert countries to put water in; and behind him

76
Omar visits
Jerusalem.

Arabia.

a wooden platter. Before he left the place where he had rested the preceding night, he constantly said the morning prayer; after which he addressed himself to his attendants in a devout strain, always uttering before them some pious ejaculations. Then he communicated his provision to them; every one of his fellow-travellers eating with him out of the same platter, without the least distinction. His clothes were made of camels hair, and were in a very tattered condition; nor could any thing be more mean or sordid than the figure he made. On the road he distributed justice among his subjects: concerning which we have several anecdotes; but that most to his honour is the following. Having observed some poor tributaries exposed to the heat of the sun, a very cruel punishment in those hot countries, for not being able to pay the sum demanded of them, he ordered them to be released; telling his attendants, that he once heard the apostle of God say, "Do not afflict men in this world; for those who do so, God shall punish in hell-fire at the day of judgement." His orders were immediately executed, to the great grief of the oppressors; and the khalif continued his route. On the confines of Syria he was met by Aub Obeidah attended by an escorte, who conducted him to the Moslem camp, where he was received with the utmost demonstrations of joy; and from thence to Jerusalem. The morning after his arrival, he said prayers and preached to the troops. In his sermon he repeated the following passage out of the koran, "Whomsoever God shall direct, he shall be rightly directed; and whomsoever he shall cause to err, thou shalt not find any to defend or to direct." Upon this a Christian rose up, and said aloud twice, "God causes no one to err." Omar made no answer to him, but commanded the Moslems near him to strike off the infidel's head if he repeated those words again; but the priest took care to give him no further interruption. After the conclusion of his sermon, he pitched his tent, made of hair, within sight of the city: then he signed the articles of capitulation; by which the inhabitants were intitled to the free exercise of their religion, the possession of their properties, and his protection.

The articles of capitulation being signed, Omar, in pursuance of his engagements, gave the inhabitants a schedule, by which they were secured in the full possession of all that had been agreed upon; after which the gates were opened to him, and he entered the town. He was waited upon by the patriarch Sophronius, with whom he conversed familiarly, and asked him many questions concerning the antiquities of the city. One of the first places they visited was the temple of the resurrection, in the midst of which Omar sat down; and when the hour of prayer was come, told the patriarch he had a mind to pray, and desired him to show him a place for that purpose. Sophronius told him he might do so where he was; but this he absolutely refused. Then the patriarch led him to St Constantine's church; but he likewise declined praying there. At last he said his prayers upon one of the steps of the east gate of the church; telling the patriarch afterwards, that had he prayed in any of the churches, the Moslems would infallibly have taken it from them, which he said they might attempt as it was, and therefore gave him a paper, wherein the Moslems were commanded not to pray on the steps of St Constantine's

church in any numbers, but only one by one. After this he desired the patriarch to show him a place where he might erect a mosque; and was conducted to the place where Jacob's stone lay, on which he slept when he saw the vision of the ladder. This stone had been hitherto slighted, and no building suffered to be erected upon it, in order to fulfil our Saviour's prophecy, that the habitation of the Jews should be left unto them desolate, and that not one stone should be left upon another. In consequence of this neglect it was entirely covered with dirt, which the khalif immediately began to carry away in his vest; and the Moslems soon hastening to assist him, the stone was cleared in a very short time. We are told by Theophanes, that when Omar entered the temple of the resurrection, he was clad in such mean and dirty apparel, that the patriarch took great offence at his appearance, and with much difficulty at last prevailed upon him to put on some clean linen and clothes till his own could be washed. The same author relates, that when the patriarch first saw Omar in that place, he could not forbear crying out, "This is of a truth the abomination of desolation, spoken of by Daniel the prophet, standing in the holy place!" These words, as Mr Ockley imagines, being overheard by the Moslems, they trumped up a story of the patriarch's having owned that the conquest of Jerusalem by Omar was foretold by the prophet Daniel; and that an ancient prophecy was kept in Jerusalem concerning Omar wherein his person was described, his name and religion specified, and he declared to be the only man that could reduce that city.

Before the khalif left Syria, he divided that country into two parts; one of which, that lay between Haïran or Aïran and Aleppo, which was not perfectly conquered, he committed to the care of Abu Obeidah, giving him the strictest orders to reduce it as soon as possible. Yezid Ebn Abu Sofian was commanded to take upon him the care of the other, which comprehended Palestine, and the sea-coast, and to make himself absolute master of it, having a body of troops assigned him for that purpose. He also directed Amru Ebn Al As to invade Egypt, then in a very languishing condition, with a body of Moslem forces. After having made these dispositions for extending his conquests, Omar set out for Medina, where he arrived in perfect health, to the great joy of the inhabitants, who apprehended, from his long stay at Jerusalem, that he had intended to fix his residence there.

Soon after Omar's departure, Yezid advanced to Cæsarea; but found the place so strong, that he was obliged to continue some time in a state of inaction. Abu Obeidah, in the mean time, advanced towards Aleppo, the citadel of which was at that time the strongest in Syria. The citizens were struck with the utmost consternation at his approach. They had at that time two governors, who were brothers, and resided in the castle, which was situated at a little distance from the city. The names of these two governors, who were of very different dispositions, were Youkinna and John. Their father, by the emperor Heraclius's appointment, presided over all that tract which lay betwixt Aleppo and the Euphrates; and, after his death, the chief management of affairs devolved upon Youkinna, his brother John spending his time mostly in devotion and acts of charity.

Arabia.

Arabia.

79
A Moslem
detachment
defeated by
Youkinna.

charity. He would therefore gladly have prevailed on Youkinna to purchase a peace from the Arabs with money, rather than make his country a scene of blood and ravages; but this not suiting the martial genius of Youkinna, he armed a considerable number of the citizens, among whom were several Christian Arabs, and distributed money among them. He then told his men that he intended to act offensively against the Arabs, and even to engage them if possible before they drew too near. To inspire them with the greater resolution, he observed, that the Moslem army was divided into several bodies; one of which had orders to besiege Cæsarea, another to march to Damascus, and the third to invade Egypt. Having thus animated his troops, he put himself at the head of 12,000 of them, and marched forwards to get intelligence of the enemy's motions. Abu Obeidah, in the mean time, had sent before him Caab Ebn Damarah, with 1000 men; giving him express orders not to fight till he had received information of the enemy. Youkinna's spies discovered Caab and his men resting themselves and watering their horses without the least apprehension of danger; of which the general being apprised, he posted one part of his troops in ambuscade, and with the other attacked the Moslems. The Arabs behaved with their usual valour; and at first repulsed the Christians, notwithstanding their superiority in numbers: but being attacked by the troops that lay in ambush, they were at last forced to retire; having 170 killed, and almost all the rest wounded.

80
Aleppo sub-
mits to Abu
Obeidah.

81
Cruelty of
Youkinna.

After Youkinna's departure, the inhabitants of Aleppo, considering the calamities that awaited them if their city should be taken by storm, submitted without delay to Abu Obeidah, and were taken under the protection of the khalif. This disagreeable news being communicated to Youkinna, he posted home with all possible expedition, lest an attempt should be made on the castle in his absence. On his arrival at Aleppo, he was so highly incensed against the inhabitants, that he threatened them with death if they did not disannul the treaty with the Arabs, and deliver up the authors of it into his hands. This demand not being immediately complied with, he fell upon the citizens with great fury, and killed 300 of them; among whom was his brother John, whose head he caused to be struck off, charging him with being the author and abettor of the late pernicious scheme. He would have made a much greater slaughter, had not the Moslem army at that instant arrived before the town; upon which Youkinna retired into the castle with a considerable body of troops: but before this could be effected, he was obliged to sustain an attack from the Arabs, in which he lost 3000 men. The action was no sooner ended than the inhabitants of Aleppo brought out 40 of Youkinna's men, and as a proof of their fidelity delivered them into Abu Obeidah's hands. Of these, seven embraced Mahometanism, and the rest were beheaded.

82
He is besieged in the
citadel.

Immediately after Youkinna had shut himself up in the castle, a council of war was held in the Moslem camp, wherein it was deliberated what measures were to be pursued on the present occasion. Khaled gave it as his opinion, that the castle ought immediately to be attacked with all the Arab forces, before the emperor had time to send them any assistance. This advice was followed by Abu Obeidah, who caused the citadel to

be immediately invested; and soon after he had surrounded it with all his forces, made a most vigorous assault. The besieged defended themselves with great bravery, and after a very warm dispute drove the enemy into their camp; and as they drew a great many stones out of their military engines, many of the Moslems were killed, and a much greater number wounded. This encouraged Youkinna to make a sally with a strong party of the garrison the following night. The fires being then out in the Moslem camp, and the besiegers not expecting such an unseasonable visit, 60 of them were killed on the spot, and 50 taken prisoners. Youkinna, however, being briskly attacked by Khaled, who soon drew together a body of troops to oppose him, lost about 100 men in his retreat. The next day, he caused the prisoners to be beheaded in sight of the Moslem camp; and receiving advice that a strong party of Arabian cavalry was sent out to forage, he ordered a body of his horse to drive them to their camp; which they accordingly did, killed 130 of them, seized all their camels, horses, &c. and then retired to the mountains. Here they proposed to remain concealed till the following night, and then return to the castle; but Abu Obeidah, being informed of what had happened, detached Khaled and Derar with a body of troops to pursue the Greeks, and revenge the late affront. Khaled, being informed of the route the Christians had taken, possessed himself of the only pass by which they could return to the castle; and having posted there a body of his men whose courage he could depend upon, took 300 of the Greeks prisoners as they attempted to return, and put all the rest to the sword. The next morning, to retaliate Youkinna's cruelty, the prisoners were all brought out and beheaded in sight of the garrison.

Notwithstanding this disaster, Youkinna made several sallies with good success, wherein he killed a great number of the enemy, and harassed them to such a degree, that Abu Obeidah found himself obliged, for his greater security, to remove his camp to about a mile's distance from the castle; by which manœuvre he likewise hoped that Youkinna would be less upon his guard. Herein, however, he found himself mistaken: for the Greek commander, by the prudent measures he took, eluded all surprise; and though Abu Obeidah continued the siege for four months after the last-mentioned blow given to the garrison by Khaled, yet he had scarce any hopes of making himself master of it at last. Having nothing material to write to the khalif, he remained a long time silent; at which Omar being very much concerned, wrote to him, desiring an account of the affairs in Syria. Abu Obeidah acquainted him that the city of Aleppo had submitted to him; and that the citadel was the only place which held out in all that country, before which he had lost a great number of men, which, he said, had induced him to think of raising the siege, and moving with his army in that track which lay between Antioch and Aleppo. This news was by no means agreeable to the khalif, who commanded his general to continue the siege at all events, and sent him a reinforcement of Arab troops, together with 70 camels, to assist the infantry in their march.

Among the troops sent by Omar on this occasion, there was an Arab of a gigantic size, called *Dames*, taken by who stratagem.

Arabia.

83
His vigorous
defence.

84

The citadel
taken by
stratagem.

Arabia.

who was a man of great courage and resolution. He observing the little progress made by the Moslems, bethought himself of a stratagem by which that fortress might be reduced, which seemed so difficult to be accomplished by force. He therefore desired that Abu Obeidah would assign him the command of a party consisting only of thirty men; which at Khaled's request was readily granted. Then he begged the general to raise the siege, and retire to about three miles distance from the castle, which was likewise immediately complied with. The following night Dames, who had posted himself with his party very near the citadel, found means to seize a Greek, from whom he learned that Youkinna, after the siege was raised, had exacted large sums of money from the citizens, on account of the treaty they had concluded with the Arabs; and that he was one of those who had endeavoured to make their escape from the oppression of such a tyrant, by leaping down from the wall. This man Dames took under his protection; but beheaded five or six others who fell into his hands, and could give no good account of themselves. He then covered his head and shoulders with a goat's skin, and took a dry crust in his hand, creeping on the ground till he got close to the foot of the wall. If he heard any noise, or suspected any person to be near, he made such a noise with his crust as a dog does when he is gnawing a bone; his companions sometimes walking, and sometimes creeping after him in the same manner. He had before dispatched two of his men to Abu Obeidah, to desire that a detachment of horse might be sent him by break of day to support his small party, and facilitate the execution of the plan he had formed. At last Dames found an opportunity of raising seven men upon his shoulders, who stood one upon another's shoulders in such a manner that the highest reached the top of the wall. Here he soon placed himself, seized a watchman whom he found asleep, and threw him over the wall. Two others, whom he found in the same condition, he stabbed with his dagger, and threw them over likewise. Then he laid down his turban, and drew up the second of his brethren, as they two did the third, and by their help Dames himself and all the rest were enabled to mount the wall. He then privately stabbed the centry at each of the gates, and put his men in possession of every one of them. The soldiers of the garrison, however, were at last alarmed, and surrounded the Arabs, who were on the point of perishing, when Khaled appeared at the head of a detachment of cavalry. On sight of that general, who was now grown terrible to the Christians, the besieged threw down their arms and surrendered at discretion. Youkinna and some of the principal officers turned

85
Youkinna's
apostacy.

Mahometans, in order to save their possessions; and the castle, being taken by storm, was pillaged by the Moslems. Dames acquired great glory by this exploit; and, out of complaisance to him, the army did not decamp from Aleppo till he and his men were perfectly cured of their wounds.

After the reduction of the citadel of Aleppo, Abu Obeidah intended to march to Antioch; but was diverted by Youkinna, who was now become a violent enemy to the Christians. He told the Moslem general, that his conquest of that part of the country would not be complete without the reduction of Azaz, a

place of great importance, where Theodorus, Youkinna's cousin-german, was commandant. This fortress he proposed to become master of, by putting himself at the head of 100 Arab horse dressed in the Greek habit, who were to attend him to Azaz. Upon his arrival there, he was to assure Theodorus that he was still in reality a Christian, and had taken that opportunity to escape from the Moslem camp. But, to make his story more probable, Abu Obeidah was to send after him a detachment of 1000 horse, who were to pursue him as far as Morah, a village in the neighbourhood of Azaz, with orders to post themselves there; from whence, if such a measure should be found necessary, they might easily advance to Azaz, to facilitate the conquest of that place. To this scheme Abu Obeidah agreed; but Youkinna with all his men were immediately taken prisoners by Theodorus, who had been informed of the whole affair by a spy in the Moslem camp, who had sent him a letter by a pigeon. The fortress, however, was soon reduced, and Youkinna regained his liberty; but was soon after taken prisoner a second time, and brought before his old master Heraclius, who then resided at Antioch. He told the emperor, that he had only pretended to embrace Mahometanism, in order to be able to do his Imperial Majesty the more essential service; and so far gained upon him, that he was soon after appointed governor of that city; the consequence of which was, that the Arabs were put in possession of it by his treachery.

Arabia.

86
He is taken
prisoner
and brought
before He-
raclius.

The emperor being quite disheartened at his continual bad success, it was suggested to him by the king of Ghassan, who had fled to him for refuge, as we have already observed, that, however desperate his affairs might be, they would be perfectly restored by the assassination of the khalif. This piece of service he undertook to perform for the emperor; and dispatched one Wathek Ebn Mofaser, an Arab of his tribe, and a resolute young man, to Medina for that purpose. Wathek, some time after his arrival there, having observed the khalif to fall asleep under a tree, on which he had placed himself so as not to be observed by any one, drew his dagger, and was upon the point of stabbing him; but, as the Arab writers tell us, he was deterred by a lion, who walked round the khalif, and licked his feet till he awoke, after which he instantly went away. This struck Wathek with a profound reverence for Omar; he came down from his tree where he had been confined by the lion, confessed his design, and embraced the Mahometan religion.

87
Attempt to
assassinate
Omar mis-
carries.

Soon after the reduction of Antioch, Abu Obeidah sent an account of his success to Omar; and receiving an order to invade the mountainous parts of Syria, he asked his general officers which of them would command the body of troops destined for that purpose. One Meisarah Ebn Mesrouk having offered his service, the general gave him a black standard, with the following inscription upon it in white letters: "There is but one God; Mahomet is the Apostle of God." The body assigned him for this purpose consisted of 300 Arabs, and 1000 black slaves commanded by Dames. Meisarah, at the head of his troops, with some difficulty ascended the mountains, and, with much more, advanced to that part where the emperor's forces were posted. The cold was so intense on the summits of those mountains, that the Arabs, who had been

88

The
Greeks de-
feated.

Arabia.

been accustomed to a warm climate, could hardly bear it. For some time they could not meet with a single person to give them intelligence of the enemy's motions; but at last they took a Greek prisoner, who informed them, that the imperial army, which consisted of 30,000 men, lay encamped on a spot not three leagues distant. The prisoner refusing to profess Mahometanism, they cut off his head, and then marched towards the imperial camp. The Greeks, hearing of their approach, advanced to meet them; and the Moslems being surrounded on all sides, were on the point of being all cut off, when Khaled appeared at the head of 3000 horse, and after him Ayab Ebn Ganem with 2000 more. At the approach of the horse under the command of the terrible Khaled, the Greeks retired, leaving all their tents, together with their rich furniture and effects, to the Arabs. In this engagement, one of Omar's chief favourites, named *Abdalla Ebn Hodafa*, was taken prisoner, and sent directly to Constantinople. The khalif was so much concerned at this, that he sent a letter to Heraclius, desiring his release; which the emperor not only complied with, but made him many valuable presents, sending at the same time a jewel of immense value as a present to the khalif. This Omar offered to the jewellers of Medina, but they were ignorant of its value: the Moslems therefore begged him to keep it for his own use; but this he said he could not be answerable for to the public. It was therefore sold, and the money deposited in the public treasury.

89
Omar's dis-
interested-
ness.

About this time also Khaled advanced with a body of troops as far as the Euphrates, and took Manbij, Beraa, Bales or Balis, exacting of the inhabitants 100,000 dinars for their present security, and imposing on them an annual tribute for the future. He also made himself master of Raaban, Dulouc, Korus, the Cyrus or Cyrrhus of the ancients, and several other fortified towns, nothing being now able to stand before him. Amru Ebn Al As now likewise prepared for the reducing some places in Palestine that still held out. While he remained in this province, he had a conference with Constantine the emperor's son, who endeavoured to persuade him to make peace with the Christians; but this he not agreeing to, unless they would consent to pay tribute, all hopes of an accommodation vanished, and the generals on both sides prepared to enter upon action. In the mean time an officer came from the Christian camp, dressed in very rich apparel, who challenged the stoutest man among the Moslems to fight him in single combat. The challenge was accepted by a young Arab officer of Yaman; who being animated by a notion, derived from the prophet himself, that "the spirits of the martyrs rest in the crops of green birds, that eat of the fruits and drink of the rivers of paradise," discovered an uncommon eagerness to encounter his enemy. But the Christian officer not only killed this youth, but two or three more of the Moslems who came to his assistance. He was then attacked by Serjabil Ebn Hofanah, one of the generals, but a man so weakened by fasting, that he could scarce stand before him, and would therefore have been undoubtedly killed, had not a Greek horseman very opportunely interposed, and with one blow of his scymitar cut off the Christian's head. Serjabil, greatly surprised at this deliverance, asked the horseman who

90
Account
of Toleiha
the false
prophet.

he was, and from whence he came; to which he replied in the following terms: "I am the unfortunate Toleiha Ebn Khowaid, who set up for a prophet, and, lying against God, pretended to inspiration." In consequence of having saved his life, Serjabil introduced him to Amru; and writing a letter to Omar, wherein he acquainted him with the signal proof Toleiha had given of his repentance, he obtained his pardon from the khalif.

Arabia.

Though the two armies did not come to a general engagement, yet they had frequent skirmishes, in which the Arabs always got the better, and in some the Greeks suffered very considerably. This, together with the severity of the season, which was then uncommonly cold, so dejected the soldiery, that they began to desert in great numbers. Constantine, therefore, finding his troops to diminish daily, and the Arabs to grow stronger and stronger, took the advantage of a tempestuous night to escape to Cæsarea, which Yezid had not been able to take, leaving his camp to be plundered by the enemy. This city was soon after invested by Amru; and at the same time, Youkinna having made himself master of Tripoli by treachery, seized 50 ships from Cyprus and Crete, which carried a supply of arms and provisions for the emperor's troops, and had entered the port without knowing that the Arabs were masters of the town. With these ships he undertook an expedition against Tyre; and telling the inhabitants that he brought a supply of arms and provisions for Constantine's army, he was admitted into the town, and received with great kindness. Here, however, he had not been long before he was discovered by one of his own soldiers, and put under arrest, with 900 of his men. He was however set at liberty by those to whose care he was committed; and then opened the gates of the town to Yezid, by whom it had been invested. Constantine having got intelligence at Cæsarea of the loss of Tripoli and Tyre, was so disheartened, that he set sail from that city with all his family and the greatest part of his wealth; and the citizens then thought proper to make the best terms they could with Amru. The surrender of this city was followed by that of all the other cities and fortresses in the province; and thus the Arabs drove the Greeks out of the whole country of Syria extending from the Mediterranean to the Euphrates. This conquest was completed in the 18th year of the Hegira, six years after it had been undertaken.

91
Youkinna
takes Tri-
poli.

92
Tyre and
Cæsarea
reduced.

This year there happened such violent storms of hail in the peninsula of the Arabs, that a considerable extent of territory was laid waste by them, and a great number of animals of various kinds destroyed. An epidemical distemper likewise raged at Medina, which spread itself all over the neighbouring territory, and swept away great numbers of people. Syria also was visited by a dreadful plague; so that the Moslems lost there 25,000 men, among whom were Abu Obeidah himself, Yezid Ebn Abu Sofian, Serjabil, and many other persons of distinction. In short, so great was the mortality occasioned by the plague, both in Arabia and Syria, that the Arabs style the 18th year of the Hegira the year of destruction.

93
Violent
storms,
plague, &c.

Amru Ebn Al As having now executed the khalif's orders in Syria, set out in his expedition against Egypt. His first attempt was on Tarma, a town situated on the isthmus of Suez. This he reduced after a month's siege;

94
Egypt re-
duced.

Arabia. siege; and having narrowly viewed its situation, he formed a design of cutting through the isthmus, and thus joining the Mediterranean and Red Sea: but this project was not well relished by the khalif, who apprehended that it would facilitate the entrance of the Christians into the peninsula of Arabia. From Tarma he marched to Mesr, the Memphis of the ancient geographers; which, after a siege of seven months, was delivered up to him by the treachery of Al Mokawkas the governor. From Mesr he continued his march towards Alexandria, and, having defeated the emperor's army, closely invested that city. While his army lay before this capital, Amru himself had the misfortune to be taken prisoner and carried into the town. Being brought before the governor, he asked him why he committed such ravages and depredations in the Christian territories? To this Amru resolutely answered, "We are come hither to oblige you either to profess Mahometanism, or pay an annual tribute to the khalif; to one of which conditions you must submit, or be all of you put to the sword." A Greek who stood by, hearing this, told the governor that Amru was certainly the Moslem general, and therefore desired him to cut off his head. Upon this Werdan, one of Amru's slaves, perceiving the extreme danger his master was in, gave him a box on the ear, exclaiming against his impudence for talking in such a manner. The governor being imposed upon by this shallow artifice, not only saved his life, but, to show his generosity, dismissed him without ransom. This was soon followed by the loss of Alexandria, and that by the conquest of the whole kingdom: after which, Amru dispatched Okba Ebn Nafe with a body of troops to penetrate farther into Africa; and that general made himself master of all the country lying between Barka and Zoweilah, reducing under his dominion also that part of the continent which now forms the piratical kingdom of Tripoli in Barbary.

95
Together
with Barca
and Tripoli.

Soon after the Moslems had made themselves masters of Alexandria, a grievous famine raged in Arabia, particularly at Medina, then the residence of the khalif. This obliged Omar to write to Amru to send him a supply of corn, with which Egypt at that time abounded. In compliance with this order, Amru sent a train of camels laden with corn, in a continued line from Egypt to Medina; the first of which were entering Medina when the last were leaving Alexandria. But this method of conveying corn proving too tedious and expensive, he ordered him to clear the Amnis Trajanus of Ptolemy, now the Khalis, which runs from one end of Cairo to the other, of the sand and gravel with which it was choked. This he accordingly did, and by that means rendered the communication between Egypt and Arabia much more easy than it had formerly been.

96
The Persians
defeated.

While the Arabs thus extended their conquests in the west, they were no less successful in the east. We have already taken notice of Khaled's having been sent into Irak to reduce the kingdom of Hira, and of his being recalled to assist in the conquest of Syria. As the kings of Hira were under the protection of the Persian monarchs, the destruction of that kingdom necessarily brought on a war with the Persians. After the departure of Khaled, the command of the forces was left with Abu Obeid Ebn Masud, together with Al Mothanna Ebn Haretha, Amru Ebn Hasem, and

Salit Ebn Kis. Abu Obeid having passed a river contrary to the advice of the other generals, was killed, and his troops in great danger; however, Al Mothanna made an excellent retreat, and repassed the river without any considerable loss. After this he fortified himself in his camp till he received a considerable reinforcement from the khalif; when the Moslem army marched to Dir Hind, and thence continued to make frequent excursions, ravaging that part of Irak that lay next to the Euphrates. A body of 12,000 chosen horse was now dispatched against those invaders, under the command of one Mahran. At first the Persians had the advantage, and obliged the Arabs to retire; but they were soon brought back by Al Mothannah, and the battle lasted from noon till sunset. At last Al Mothannah, engaging Mahran in single combat, laid him dead at his feet; upon which the Persians fled to Al Madayen, a town situated on the Tigris, about a day's journey from Bagdad. After this a powerful army was dispatched by the Persians under the command of one Rustam; but he also was killed, and his troops were entirely dispersed. At the same time, Abu Musa, another Moslem general, defeated a formidable body of troops under the command of Al Harzaman, a noble Persian, at Ahwaz.

Not content with those victories, soon after the reduction of Damascus, the khalif dispatched Saad Ebn Abu Wakkas, to dislodge the Persians from some districts they possessed in the neighbourhood of the Euphrates. Saad having drawn together a body of 12,000 men, advanced to Kadefia, a city bordering upon the deserts of Irak; where having utterly defeated an army of 120,000 Persians, he made himself master of the opulent city of Al Madayen, and possessed himself of Yezdejerd's treasure; which was so rich, if we may believe the Arabian writers, that Saad took out of it three thousand millions of dinars, amounting to two thousand and twenty-five millions of pounds sterling; an enormous and almost incredible sum. From thence Saad went to that part of the palace where the king's plate was deposited, which he carried off, as well as an immense quantity of camphire with which another part of the palace was entirely filled. This last the Arabs seem to have carried off merely for the sake of plundering, as they were so much unacquainted with the nature of it, that they mixed it with their bread, which gave it a bitter and disagreeable taste. Afterwards the Arab general carried off the crown and royal garments, adorned with gold and jewels of inestimable value. He also plundered his armoury, which was well stored with all sorts of weapons; after which he caused the roof of his porch to be opened, where he found another treasure equal in value to ten millions of crowns. He also found among the furniture of the palace a piece of silk tapestry, 60 cubits square, which was adorned with a great variety of beautiful flowers, herbs, and plants, formed of gold, silver, and jewels, the most valuable that could be procured. This being brought to Omar, he cut it in pieces, and distributed it among the Moslems; and that part which fell to Ali's share, and which was yet none of the best, he sold for 20,000 crowns.

97
Incredible
treasure
taken from
them.

In the twentieth or twenty-first year of the Hegira, the Arabs, still unsated with conquest, invaded Mesopotamia under Aiyad Ebn Ganem, where the city of Edessa submitted on the first summons. From Edessa

98

Mesopotamia
reduced.

Arabia.

deffa he marched to Constantia, or Constantina, supposed to be the Nicephorium of the ancients. This he took by storm, as likewise Daras, where he massacred all the people he found in the place; and these repeated successes so terrified the rest of the fortified towns, that they all submitted without resistance. At the same time Al Mogheirah Ebn Shaabah, one of the khalif's commanders, made himself master of Shiz, a place famous for the birth of Zerdusht the Persian philosopher, and over-ran the whole province of Aderbijan. He also possessed himself of all the country of Armenia bordering on mount Taurus; nay, he in a manner obliged the whole region to own the authority of the khalif, and penetrated into Cappadocia. The same year also Saad made himself master of Ahwas, the capital of Khuzestan (the ancient Susiana); in consequence of which he became master of the greatest part, if not the whole, of that province; at the same time that Al Nooman conquered the greatest part of Khorasan. But while Omar's troops were thus irresistibly over-running the finest countries in the known world, a period was put to his conquests and his life, by a Persian named *Abu Lulua*, who stabbed him thrice in the belly while he was performing his devotions at Medina. The reason of this was because the khalif refused to remit him some part of the tribute which according to the Mahometan custom he was obliged to pay for the free exercise of his religion. The Arabs, perceiving that he had killed their sovereign, immediately rushed upon him; but the assassin defended himself so desperately, that he killed seven of them and wounded 13: but at last one of the khalif's attendants threw his vest over him, and seized him; upon which he stabbed himself, and soon after expired.

99
Omar murdered.

100
Succeeded by Othman.

Omar having languished three days after the wounds given him by the Persian, expired in the 10th, 11th, or 12th year of his reign, and after his death Othman Ebn Affan was chosen; though Ali had a better title, and seems indisputably to have been the most virtuous, if not the only virtuous person, as well as the bravest warrior among them. He was inaugurated in the 24th year of the Hegira, nearly coincident with the year of our Lord 645.

Othman was no sooner settled on the throne, than he commanded Al Mogheirah to complete the conquest of the territory of Hamadan; which he easily accomplished, and at the same time reduced Bira, a strong castle in Mesopotamia, which either had never submitted, or had revolted on the departure of the Moslem troops out of that province. Another army, under Abdallah Ebn Amar, was also dispatched into Persia, to deprive Yezdegerd of the poor remains of his dominions; and this was done so effectually, that the unhappy monarch was obliged to fly to Sijestan and abandon Persia altogether.

101
Colossus of Rhodes destroyed.

In the 27th year of the Hegira, the island of Cyprus was reduced by Moawiyah; who soon after conquered the island of Aradus, and took Ancyra; after which he reduced the island of Rhodes, broke in pieces the famous Colossus, and sold the metal of it to a Jew of Edeffa. In the mean time another of the Arab commanders entered Isauria, where he committed dreadful depredations, plundering many towns and villages, putting a great number of people to the sword, and carrying off 5000 prisoners. In the 31st year of the He-

gira, one Habib having made an eruption into that part of Armenia which was still unconquered, defeated a body of the emperor's troops, pursuing them as far as mount Caucasus, and laying waste all the neighbouring territory. About the same time also, Abul Abar, who had been constituted admiral by Moawiyah, gave the emperor Constans a signal defeat by sea, on the coast of Lycia, in which such a number of Christians were killed, that the neighbouring sea was dyed with their blood.

But while Othman was thus carrying every thing irresistibly before him abroad, he neglected to secure the affections of his subjects at home, which soon proved his ruin. Sedition was industriously propagated through all the provinces of the empire, and articles of accusation brought against the khalif. The chief of these were, That he had recalled one who had been banished by the prophet; that he had removed Saad, an officer of distinguished bravery, and supplied his place by one who drank wine, and was otherwise of a scandalous life; that he had squandered away vast sums among his favourites; that he had removed Amru from the government of Egypt, to which he had preferred his own foster-brother; and, lastly, that he had presumed to sit on the top of Mahomet's pulpit, whereas Abu Becr had always sat on the highest step and Omar on the lowest. To this formidable accusation the poor khalif pleaded guilty, and promised to make all the reparation in his power; but his condescension only served to increase the insolence of the rebels. They were however appeased by Ali; and public tranquillity had undoubtedly been restored, had it not been for Ayesha, one of Mahomet's widows, who procured the destruction of the khalif by a scheme truly worthy of the wife of such an husband. That traitress, being desirous of raising one of her favourites named Telha to the dignity of khalif, prevailed on Merwan the secretary of state to write a letter to the prefect of Egypt, enjoining him to put to death Mahomet Ebn Abu Becr, with whom it was sent, and who was to be his successor. This letter Merwan took care should be discovered: and Mahomet taking it for a genuine order of the khalif, published the supposed injury all over the neighbouring countries. He then marched with a body of rebels to Medina, where the innocent khalif was besieged in his palace; and, notwithstanding all his protestations, nothing less than his death could satisfy the enraged multitude. In this deplorable situation Othman sent to Ali for assistance; who commanded his two sons Hasan and Hosein to defend the palace-gates. This they did for some time with fidelity enough, till finding the khalif reduced to great straits for want of water, they abandoned their posts; upon which the rebels easily made themselves masters of the palace, and cruelly murdered the khalif, in the 82d year of his age, after he had reigned 12 years. His body remained three days unburied; and was at last thrown into a hole made for it, without the usual ablution, or the least funeral solemnity.

Arabia.

102
Insurrections against the khalif.

103
He is murdered.

The arms of the Moslems had hitherto been so successful, and their conquests so rapid, that they may seem not only to have vied with Alexander, but to have bid fairer for universal monarchy than any nation either before or since.—The ruin of mighty empires always originates from the impossibility of keeping them united

Arabic. united. Divisions arise; civil wars break out; and the kingdom being weakened by these intestine feuds, the common enemies take advantage of them to ruin the whole fabric. If we consider Mahomet, as in truth he was, not as an enthusiast, but as a politician, and the founder of an empire; we shall find him in that capacity superior perhaps to any that ever existed. The empire of Alexander the Great, which arose with still more rapidity than that of the Arabs, had no support but from his own ambition and personal qualifications. While he lived, he was without a rival, because all were afraid of him; but when he died, the bands of union, whereby his empire had been held together, were immediately dissolved. His captains were not inspired with the same veneration for his son, who was unborn at the time of his death, that they had for his father; and therefore they sought not to conquer for him, but for themselves; and the consequence was, that the kingdom fell to pieces the moment that he died. The same thing happened to the empires of Jenghiz Khan, Tamerlane, and others, who made vast conquests in a short time. They erected mighty empires indeed; but their duration, we may say, was but momentary. The empire of the Romans was founded on a kind of enthusiastic desire of aggrandizing the city of Rome: patriotism became fashionable; and as the city never ceased to exist, those who conquered always had the same end in view, namely to exalt the republic more and more. This empire, therefore, was not only very extensive, but very durable; though, as it was impossible that mankind could always continue to venerate a city, the same divisions that ruined other empires at last brought this to an end. The foundation of Mahomet's empire seemed to be still more firm. He was not only the king, but, we may say, the god of his people. Whatever enthusiasm people may show in defending their country, nay even their nearest relations, experience has taught us, that it is greatly inferior to what is shown by those who fight in defence of religion. This enthusiasm Mahomet had taken care not only to bring over to his side, but to exalt to its highest pitch, by inculcating upon his followers, that their rewards in the next world should be proportionable to the fury with which they fought in this. To live at peace, except with those who submitted to his will, did not at all enter into his plan; and he who made no conquests, or at least did not strive to make them, was no true believer. By this means, let his empire be ever so much extended, the temptation to making fresh conquests was still equally strong: and not only the commanders of armies, but every private person, had the most powerful motives to urge him towards the conquest of the whole world, had that been possible. The only thing Mahomet seems to have failed in was, the appointment of the succession to the apostleship; and why he was deficient in this is inconceivable. From this one source proceeded the divisions which ruined his empire when it was scarce erected, and of which we are now to give the history.

104
Causes of
the decline
of the Mos-
lem em-
pire.

Though the prophet had been so deficient in providing for the safety of his kingdom as not to name a successor at his death; yet his son-in-law Ali was always of opinion that the succession belonged of right to him; and that it ought to be, like that of other kingdoms, hereditary. This disposition to render the apostleship

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hereditary in his family, was, in all probability, what disgusted the Moslems with Ali; against whom they could otherwise have no objection: for he was endowed with every amiable quality; a firm believer in Mahomet; and of such unparalleled strength and courage, that he never declined a combat to which he was challenged, nor ever failed to come off victorious; for which reason he was styled by his countrymen, "the Lion of God."

On the death of Othman, however, notwithstanding the prejudices against Ali, as none could pretend so good a right to the khalifat as he, the Arabs immediately took the oath of allegiance to him, though with an intention to break it as soon as possible, as was fully evinced by the event. The disturbances which happened immediately on Ali's accession were owing partly to the machinations of Ayesha, who, having got Othman murdered on purpose to raise Telha to the dignity of khalif, and now finding Ali unanimously chosen, resolved to destroy him also. She therefore pretended great concern for the death of the late khalif, and accused Ali of being his murderer: but being reproved by one of the Moslems for endeavouring to blacken an innocent person, when she could not but know herself guilty; she replied, that Othman's infidelity had indeed made her his enemy, but that she had forgiven him upon his repentance. At the time of Ali's inauguration she was at Mecca, where she enjoyed a very considerable share of influence and authority. At her instigation, Telha Ebn Obeidallah, and Zobeir Ebn Al Awam, began to represent to Ali, that the murderers of Othman ought to be brought to condign punishment; offering themselves at the same time for that purpose. This they did purely to sow dissention, for they themselves had been deeply concerned in the murder; and Ali, sufficiently aware of their intention, told them it was impossible till the empire should be more settled. Finding themselves disappointed in this attempt, they next begged the government of Cufa and Basra, that they might with the greater facility extinguish any rebellion that should happen. Here again Ali was aware of their intention: and refused their request, under pretence that he stood in need of persons of their great capacity, as counsellors, about his person. Then they desired leave to perform a pilgrimage to Mecca, which the khalif could not refuse; and they were no sooner got there, than they set about raising an army against him without any provocation at all.

This, however, was not the only source of discord at present. Ali had been displeased with the governors of provinces appointed by Othman; and therefore dismissed them immediately upon his accession. This was very impolitic; but he was prompted to it by that rashness and want of prudence which is inseparable from, or rather is the very essence of, great courage. The consequence of this was, that Moawiyah, governor of Syria, was, immediately upon his dismissal by Ali, proclaimed khalif by the troops under his command. Thus the Moslems were divided into two factions; the one under Moawiyah and Ayesha, who adhered to the house of Ommiyah, to which Othman and Moawiyah belonged; and the other to Ali. The adherents of the house of Ommiyah were called *Motaxalites*, or *separatists*.

Ali, finding how matters were situated, and that a very strong party was formed against him, endeavoured

Arabic.
105
Character
of Ali.

106
He is cho-
sen khalif.

107
Disturba-
nces raised
by Ayesha.

108
And Moa-
wiyah.

109
Ali raises
an army.

Arabia. to ingratiate himself as much as possible with the Koreish; and to raise an army against Ayesha, who had now taken the field, and even reduced the city of Basra. He made a formal speech to the people on hearing this bad news, and desired their assistance. But though he was very much beloved on account of his personal merit, and the best orator of the age, he could not with all his eloquence for some time prevail on them to give a decisive answer in his favour. At last Ziyad Ebn Hantelah stepped to Ali of his own accord, and said, "Whosoever retreats, we will advance." Upon this two Ansars, doctors of the law, stood up, and pronounced Ali innocent of the death of Othman; which decision soon induced the Ansars and the body of the people to espouse his quarrel. He then left Medina with a body of 900 men, and advanced to Arrabah, where he was joined by several other parties. From this place he wrote to the people of Cufa and Medina, pressing them to send him farther assistance, and to disperse the Motazalites to an accommodation. From Medina he very soon obtained a large supply of horses, arms, and other necessities; and from Cufa he obtained with difficulty a reinforcement of 8000 men.

110
He defeats
and takes
Ayesha pri-
soner.

Being greatly animated by this seasonable supply, Ali advanced towards Basra, where the troops of Ayesha were ready to receive him. Both parties seemed averse to an engagement; and Ayesha began to be very much intimidated at the sight of Ali's army, which, however, was inferior to her own: but, by some means or other, a battle was at last brought about, in which Ayesha was defeated and taken prisoner. The only remarkable effort that was made by the troops of Ayesha in this engagement, was in defence of her person. It is said, that no fewer than 70 men who held her camel by the bridle, had their hands cut off successively; and that the pavilion in which she sat was so full of darts and arrows, that it resembled a porcupine. Ayesha was treated very kindly by Ali, who at first set her at liberty, but afterwards confined her to her house at Medina, and commanded her to interfere no more with state-affairs, though he still allowed her to perform the pilgrimage to Mecca.

After this victory, Ali had no enemies to contend with either in Arabia, Irak, Egypt, Persia, or Khorasan. A strong party, however, still remained in Syria, headed by Moawiyah, who founded his claims to the khalifat on a pretended declaration of Othman that he should be his successor. In this defection he was joined by Amru Ebn Al As, who had obtained a promise of the government of Egypt, provided Moawiyah could be advanced to the dignity of khalif.

Ali, with his usual good-nature, endeavoured to bring the rebels to a sense of their duty, and often sent proposals of accommodation to Moawiyah; but he still remained inflexible. Perceiving, therefore, that it would be necessary to invade Syria, he entered that country with an army of 70,000 men, while Moawiyah advanced to meet him with 80,000; and by repeated reinforcements Ali's army at last amounted to 90,000, and Moawiyah's to 120,000. The two armies came in sight of each other towards the close of the 36th year of the Hegira, when they seemed ready to enter upon action; but only some skirmishes happened between them, wherein neither party sustained any considerable loss. The first month of the 37th year was

spent in fruitless negotiations; but in the second month they began to fight in different parties, without ever hazarding a general engagement. These battles continued, according to some, for 40 days, and according to others, 110. Moawiyah's loss amounted to 45,000 men, and Ali's to 25,000, among whom were 26 who had been intimately acquainted with Mahomet himself, and were dignified with the title of *The Companions*. The most famous of these was Ammar Ebn Yaser, Ali's general of horse, who was upwards of 90 years of age, and was highly esteemed by both parties. The loss of this general so exasperated Ali, that he charged the Syrians with a body of 12,000 men, broke them, and challenged Moawiyah to fight him in single combat. This challenge Moawiyah declined, insisting that it was not a fair one, as Ali could not but be sensible of his superiority in strength. As the challenge was given in the hearing of both armies, Amru insisted that Moawiyah could not in honour refuse it; but the coward made no other reply than that Amru aspired to the khalifat himself, and wanted to enjoy it after his death. The battle being now renewed with great fury, Moawiyah's forces were pushed to their camp; which had certainly been taken, had not Amru bethought himself of the following stratagem to retrieve Moawiyah's affairs, when he seemed on the very brink of destruction. He ordered some of his men to fix copies of the Koran to the points of their lances, and carry them to the front of the battle, crying out at the same time, "This is the book that ought to decide all differences between us; this is the book of God between us and you, that absolutely prohibits the effusion of Moslem blood."—This produced the desired effect. The khalif's troops threw down their arms, and even threatened him with death if he did not found a retreat; which he therefore found himself obliged to do, and thus had a decisive victory wrested out of his hands.

111
Moawiyah
challenged
to a single
combat by
Ali.

112
Amru's
stratagem.

According to this new mode of decision, the two parties were each to choose their arbitrator; but even this was not allowed to Ali, though Moawiyah had liberty to choose Amru Ebn Al As. The troops of Irak, not content with offering so gross an affront to the khalif, insisted on naming for his arbitrator Abu Musa Al Ashavi; a very weak man, and one who had already betrayed him. The consequence of this appointment was, that Ali was deposed by both the arbitrators; and he accordingly dropt his title to the khalifat, but without laying down his arms, or putting himself in Moawiyah's power.

113
Ali deposed.

After this decision, Ali retired to Cufa; where he was no sooner arrived, than 12,000 of these troops who had themselves forced him to accept of the arbitration, pretending to be offended with the step he had taken, revolted from him. These were called *Kharejites*, that is, rebels or revolvers: and *Mohakkemites*, or judiciarians, because they affirmed that Ali had referred to the judgment of men what ought to have been only referred to the judgment of God; and, therefore, that instead of keeping the peace he had made with Moawiyah, he ought to pursue his enemies, who were likewise the enemies of God, without mercy. To this Ali replied, That as he had given his word, he ought to keep it; and, in so doing, he only followed what was prescribed by the law of God. The *Kharejites*

Arabia.

rejites replied, That God was the only judge between him and Moawiyah, and that consequently he had committed an enormous sin, of which he ought sincerely to repent. This irritating Ali, he with some warmth replied, That if any sin had been committed on this occasion, it was by themselves, who had forced him to take the steps of which they now complained. This answer not proving agreeable, they chose for their general Abdallah Ebn Waheb, who appointed for their rendezvous Naharwan, a town seated between Wafet and Bagdat, about four miles to the eastward of the Tygris; here they assembled an army of 25,000 men; and Ali, having tried gentle methods ineffectually, at last marched against them in person. Before he attacked them, however, he planted a standard without the camp, and made proclamation by sound of trumpet, that whoever would repair to it should have quarter, and whoever would retire to Cufa should find a sanctuary there. This had such an effect, that Abdallah's army was soon reduced to 4000 men, with whom he rushed upon the khalif's forces, but all of them were cut in pieces, except nine who escaped.

Had Ali marched against Moawiyah immediately after the defeat of the Kharejites, and while his troops were flushed with victory, he had probably reduced him entirely: but by allowing his troops to refresh themselves, they all deserted him, and Moawiyah's party had an opportunity of gathering still more strength; and though Moawiyah's troops often made incursions into the territories of Ali, the latter seems afterwards to have acted only on the defensive. At last the Kharejites, imagining that it would be for the good of the Moslem affairs that Moawiyah, Ali, and Amru, were dead, dispatched assassins to murder all the three. Moawiyah was wounded, but recovered; Amru's secretary was killed by mistake; but Ali was wounded with a poisoned sword, which occasioned his death. The assassin was taken, and Ali would have pardoned him had he recovered, but ordered him to be put to death if he died, that he might, as he said, "have an immediate opportunity of accusing him before God." Even in this order he showed his usual clemency, as he ordered the assassin to be dispatched at one blow, and without torture of any kind.

Thus fell Ali, the most virtuous of all the Mahometan khalifs, after he had reigned near five years, and lived 63. He was pressed by those about him to nominate a successor before he died; but this he declined, saying, he would follow the example of the Apostle of God, who had not named any: and, as his son Hasan inherited his father's piety, though not his courage, he was declared khalif without any scruple. Moawiyah, however, behaved in such a manner towards him, as showed his hostile intentions; and those about Hasan pressed him to declare war immediately. This Hasan, who was of an exceeding mild and peaceable disposition, could hardly be persuaded to do; and though he at last took the field, yet he immediately perceived his incapacity to dispute the empire with Moawiyah; and therefore resigned it, in spite of all the remonstrances of his friends, to a traitor, who caused him after some years to be poisoned by his wife.

Moawiyah being thus left sole master of the Moslem empire, found himself under a necessity of reducing the Kharejites, who were his enemies as well as Ali's,

and had now gathered together a considerable army. Against these rebels the khalif would have dispatched Hasan, but that prince refused; upon which he sent the Syrian troops against them, who were defeated: however the Cafans, being at last persuaded to take up arms, soon extinguished the rebellion, and settled Moawiyah more firmly than ever on the Moslem throne. In the 48th year of the Hegira, the khalif sent his son Yezid with a powerful army to besiege Constantinople. In this expedition he was attended by three or four of the *Companions*, who, notwithstanding their age, were prompted by zeal to undergo incredible fatigues. The Moslem forces too, though they suffered extremely, were animated to surmount all difficulties by a tradition, according to which the prophet in his lifetime declared, "That the sins of the first army that took the city of Cæsarea should be forgiven." Concerning the particulars of this expedition we are in the dark: only, in general, that it proved unsuccessful; and in it Abu Ayub, who had been with Mahomet at the battles of Bedr and Ohod, lost his life. His tomb is held in such veneration by the Moslems, that the Sultans of the Ottomen family gird their swords on at it on their accession to the throne. In the 54th year of the Hegira, the Arabs made an irruption into Bukharia, and defeated a Turkish army that opposed them. The Turks lost a great number of men; and the queen, who commanded in person, with great difficulty made her escape. She had only time to put on one of her buskins; the other fell into the hands of the Arabs, who valued it at no less than 2000 dinars. About this time also, according to the Greek historians, a treaty was concluded between the emperor and the Moslems, whereby the latter were allowed to keep the territories they had seized; in consideration of which they were to pay 3000 pounds weight of gold, 50 slaves, and as many choice horses. To these dishonourable conditions they were obliged to submit, in consequence of their late unsuccessful expedition to Constantinople, and some other defeats they had received. This peace was to continue for 30 years. The next year, Moawiyah, having conferred the government of Khorasan upon Saad, Othman's grandson, that general, soon after his promotion, passed the Jihun, or Amu, the Oxus of the ancients, and advanced with a body of troops to Samarkand, which opened its gates to him on his approach; soon after which he defeated an army of Ufbeck Tartars, and marched directly to Tarmud, or Tarmid, which also surrendered without opposition. The 57th year of the Hegira was remarkable for nothing but vast swarms of locusts, which did incredible damage in Syria and Mesopotamia: and great discontents on account of the khalif's having nominated for his successor his son Yezid, a person of scandalous life, and no way worthy of the throne. The 58th year of the Hegira was rendered remarkable by the death of Ayesha, Mahomet's widow; and the 60th by that of Moawiyah, after having reigned, from Hasan's resignation, nineteen years, three months, and five days; but concerning his age authors are not agreed. He was interred at Damascus, which was made the residence of the khalifs as long as the house of Ommiyah continued on the throne.

Yezid was proclaimed, in consequence of his nomination, the same day his father died. His inauguration

Arabia.

119
Constanti-
nople be-
sieged with-
out success.

120
Turks de-
feated.

121
Moawiyah
dies.

222
Succeeded
by Yezid.
tion

114
He defeats
the Khare-
jites.

115
They at-
tempt to
murder Ali,
Amru, and
Moawiyah.

116
Ali assassi-
nated.

117
Succeeded
by Hasan.

118
Who re-
signs the
khalifat to
Moawiyah.

Arabia.

123
Hosein and
Abdallah
refuse to ac-
knowledge
him.

tion was performed on the new moon of the month Rajeb, corresponding to April 7th, 680. Immediately after his election, he wrote to Al Walid, governor of Medina, to seize Hosein, the remaining son of Ali, and Abdallah Ebn Zobeir, in case they refused to acknowledge his right. He accordingly tendered the oath of allegiance to Hosein, who returned an evasive answer, and found means to escape to his own house. As for Abdallah, he delayed waiting upon the governor, under various pretences, for 24 hours; after which he made his escape to Mecca: hither Hosein followed him; but received an invitation from the people of Cufa, who promised to assist him in vindicating the rights of his father Ali and himself. In the mean time, Yezid, being informed of Al Walid's negligence in suffering Abdallah and Hosein to escape, removed him from his employment, appointing in his room Amru Ebn Saad, at that time commandant of Mecca. The new governor immediately dispatched against Abdallah Amer Ebn Zobeir, Abdallah's own brother, who mortally hated him: but Abdallah, having engaged Amer in the field, defeated and took him prisoner; which greatly raised his reputation at Medina, although Hosein's superior interest among them still rendered him incapable of aspiring to the khalifat by himself.

While Abdallah was thus strengthening himself at Mecca and Medina, Hosein was doing the same at Cufa. On the first notice of their inclinations, he had sent to them Moslem Ebn Okail, to whom, as representative of the son of Ali, they had taken an oath of allegiance, and were now very pressing on Hosein to honour their city with his presence. Besides this, Hosein was supported by the forces of Irak, who retained a great veneration for the memory of his father, and had all along considered the government of Moawiyah as a downright usurpation.

Notwithstanding all these steps taken at Cufa in favour of Hosein, the deliberations of the conspirators were carried on with such secrecy, that Al Nooman the governor continued a stranger to them, even after the Cufans had determined immediately to enter upon action with an army of 18,000 men. At last, however, he began to be roused from his lethargy; but Yezid being displeased with his conduct, removed him from his government, appointing for his successor Obeidallah Ebn Ziyad. This governor entered the city in the evening, and was received with all possible demonstrations of joy by the Cufans, who mistook him for Hosein, owing to a black turban which he had on his head, resembling that which Hosein usually wore. His first care was to extinguish the sedition that had been excited by Moslem. In order to this, he commanded a trusty servant to disguise himself, and personate a stranger come out of Syria to see the inauguration of Hosein; that he might get admission into Moslem's house, and penetrate all his councils. This commission was faithfully executed; and Obeidallah understanding that Moslem lodged in the house of one Sharak, who was then sick, sent a messenger to Sharik, letting him know that he intended to visit him on a certain day. Sharik immediately came to a resolution to receive him, and appointed Moslem a place in the corner of the room whence he might rush out upon Obeidallah and kill him. The visit was accordingly made; but Moslem's heart failing him, the gover-

nor escaped; Hani, however, in whose house Moslem had first lodged, was imprisoned by Obeidallah. Upon the news of this, Moslem assembled about 4000 men, and besieged Obeidallah in the castle. The governor, however, not in the least dispirited, made a speech to Moslem's followers; which had such an effect upon them, that they all deserted him except about 30. By the favour of the night, Moslem escaped to a poor woman's cottage in the neighbourhood; but being betrayed by her son, Obeidallah sent a detachment of 80 horse to seize him. Moslem made a gallant resistance, and thrice cleared the house of them; but being at last overpowered with numbers, and grievously wounded, he was taken and brought to Cufa. While on the road, he endeavoured to send an account of his bad success to Hosein, then, as he supposed, on the road to Cufa; but without success. When arrived at the castle he begged a draught of water: but those who stood by told him he should have none till he drank the hamim, or boiling liquor, which the Mahometans pretend is drunk by the damned in hell; and soon after this, being brought before the governor, he was beheaded along with Hani, and both their heads sent as a present to Yezid.

Hosein, in the mean time, was preparing to set out for Cufa, having received the most favourable advices from Moslem, of whose fate he was ignorant, and who had sent him a list of 140,000 men that were ready to obey his orders. This the wisest of his friends represented as a desperate enterprize, and entreated him to drop it, or at least to defer his journey till he should be better assured of success: but Hosein was deaf to all salutary counsel; nay, he could not, by the most earnest intreaties, be prevailed upon to forbear taking his wives and children along with him. The consequences of this obstinacy may easily be imagined: Obeidallah dispatched first 1000, and then 5000 men against him; with orders, however, not to offer any violence to him, provided he submitted himself. To these terms the infatuated Hosein would not agree: he offered indeed to return home, if Obeidallah would permit; but that not being granted, he desperately engaged the troops of Obeidallah, and was after long resistance cut in pieces with all his men. His head was brought to Obeidallah, who struck it over the mouth with a stick, and treated it with great contempt. He was also inclined to have put his family to death; but probably feared an insurrection, as the people of Cufa expressed great resentment on account of Hosein's death; nor was it at all agreeable to the khalif Yezid, who treated the family of the unfortunate Hosein with the greatest kindness.

This year, the 61st of the Hegira, Yezid appointed Salem Ebn Ziyad governor of Khorasan; who, soon after entering upon the government, made an irruption into the Turkish territories. He took his wife along with him in this expedition, who was delivered of a child in the neighbourhood of Samarcand; on which occasion she is said to have borrowed some jewels from the prince of Sogd's lady, which she afterwards carried off with her. In the mean time Salem detached Mohalleb with a considerable body of troops to Khowarazm, the principal city of the Turks or Tartars in those parts, from which he extorted the immense sum of 50,000,000 pieces of money; from whence advancing to

Arabia.

124

Hosein's
obstinacy

125

He is de-
feated and
killed.

Arabia. to Samarcand, he forced the inhabitants of that city also to pay him an immense sum; and then retired, with little loss, into the province he governed.

126
Abdallah
proclaimed
khalif.

In the mean time Abdallah Ebn Zobeir, finding himself, by the death of Hosein, at the head of the partizans of the house of Hassem, who were greatly oppressed by Yezid, began in earnest to aspire to the khalifat. As he had therefore never owned the authority of Yezid, he now openly declared against him, and was proclaimed khalif at Medina soon after the arrival of Hosein's family in that place. Soon after his inauguration, to render himself the more popular, he expatiated on the circumstances of Hosein's death, which indeed were very tragical, and represented the Cofans as the most abandoned and perfidious villains upon earth. This went so well down with the citizens of Mecca and Medina, that they flocked to him in great numbers, so that he soon found himself at the head of a considerable force. The khalif Yezid being informed of his progress, swore he would have him in chains; and accordingly sent a silver collar for him to Merwan, then governor of Medina: but the interest of Abdallah was now so strong, that he laughed at the menaces both of the khalif and Merwan. Nay, the governor of Mecca, though he secretly hated him, thought it good policy, as matters then stood, to keep up a good understanding with Abdallah: but this coming to the ears of Yezid, he deposed the governor; appointing in his place Walid Ebn Otbah, a man of known fidelity, and a bitter enemy of Abdallah. The new governor, therefore, immediately on his accession, used all his art and skill to circumvent Abdallah; but to no purpose, as the latter was always on his guard. This conduct, however, giving him great disgust, as well as terrible apprehensions, he wrote to the khalif, informing him that all the disturbances were owing to the untractable disposition of Walid; and that, if he would send a person of a different character, peace would soon be restored. This letter the khalif very injudiciously gave ear to, and dismissed his faithful governor, appointing in his room one who was totally unqualified for that post. The people of Medina, now having fresh intelligence of Yezid's dissolute manner of life, renounced their allegiance to him, and formally deposed him in a very singular manner. After they had assembled in the mosque, about the pulpit there, one of them said, "I lay aside Yezid as I do this turban," and immediately threw his turban on the ground. Another said, "I put away Yezid as I do this shoe," casting away his shoe at the same time. These examples being followed by others, there was a large heap of shoes and turbans almost instantly formed upon the spot. They then dismissed Yezid's governor, and banished from the city all the friends and dependents of the house of Ommiyah. These, to the number of about 1000, took refuge in the house of Merwan Ebn Al Hakem, where they were so closely besieged by Abdallah's party, that they found themselves obliged to send to Yezid for immediate assistance; acquainting him, that if they were not succoured, they must all inevitably perish. The khalif, though he wondered that such a number of men should suffer themselves to be so cooped up without making the least resistance, dispatched Moslem Ebn Okba to Me-

dina, with a considerable body of troops, to quell the disturbances. He ordered him to spare Ali the son of Hosein and his family, as they had no hand at all in the disturbances: then he was to summon the town of Medina to surrender for three days successively; which, if they refused, he was to take it by storm, and give it up to be plundered by the soldiers for three whole days.

The inhabitants of Medina being now sensible of their danger, suffered the friends of the house of Ommiyah to withdraw quietly out of the city; though, before they departed, a promise was extorted from them not to appear in arms against the reigning faction. Moslem, in the mean time, advanced towards the city at the head of 5000 foot and 12,000 horse; and having summoned it according to his instructions, upon its refusal made the necessary preparations for an attack. The garrison, however, for a considerable time, made a vigorous defence; but at last, most of the Ansars and principal officers being killed, the Arabs proposed a capitulation. Moslem, however, would hearken to no terms, and insisted on their surrendering at discretion; which being refused, he entered the city after a faint resistance. Ali was treated with great respect; but all the men that had carried arms were put to the sword, and Moslem suffered his troops to ravish 1000 women, and to pillage the city for three days successively. Those that escaped the slaughter he forced to acknowledge themselves the slaves and vassals of Yezid. For this extreme severity he was surnamed by the Arabs *Al Mufrif*, or *The Extravagant*, and ever after considered as an impious person, especially as the prophet had declared that the wrath of God should most certainly remain upon those who sacked or plundered the city of Medina.

After the reduction of Medina, Moslem directed his course to Mecca, where Abdallah then resided; but he died by the way, and the command of the troops devolved upon Hosein Ebn Thamiir Al Selwi. This general advanced to Mecca, which he besieged for 40 days, battering the town with such fury, that he beat down a great part of the famous temple there, and burnt the rest; nor would the city itself have escaped the same fate, had not an end been put to the war by the arrival of certain accounts of the death of Yezid, who departed this life in the 64th year of the Hegira, answering to the year 684 of the Christian era, having lived 39, and reigned three years and six or eight months. On the news of his death, Hosein offered to take the oath of allegiance to Abdallah; but the latter at that time durst not trust him, of which he had afterwards sufficient reason to repent.

Yezid was succeeded by his son Moawiyah II. who was proclaimed khalif at Damascus the same day that his father died; but being of a weakly constitution, and unable to bear the fatigues of government, resigned the crown six weeks after his inauguration, and died soon after without naming a successor.

This abdication having left the Moslem empire absolutely without a master, great commotions ensued. On the death of Yezid, Obeidallah Ebn Ziyad, governor of Basra, represented to the citizens that they ought to choose a protector till a new khalif should be chosen; and if the person so chosen should be disagree-

Arabia.

128
Medina taken and plundered by the khalif's forces.

129
Yezid died.

130
Moawiyah II. proclaimed khalif and resigned.

127
Yezid formally deposed.

Arabia.

¹³¹
Obeidallah
forced to fly
into Syria.

able to them, they might then remain in a state of independency under the protector whom they had chosen. The inhabitants, perceiving the drift of this speech, complimented him with that honour; which he accepted with seeming difficulty: but sending a deputy to Cufa, the inhabitants of that city not only refused to acknowledge his authority, but threw dust and gravel at his messenger. This coming to the ears of the people of Basra, they not only deprived Obeidallah of the dignity they had newly conferred upon him, but even expelled him the city. Nor could he prevail upon Najari, a tribe of Ansars, to espouse his quarrel, nor even upon his own relations, though he distributed among them great part of the sixteen millions of pieces of money which he had found in the treasury of Basra, and kept the remainder to himself. Nay, so odious had he rendered himself to all ranks, on account of his cruelties, particularly the death of Hosein the son of Ali, that his brother Abdallah was unable to protect him from the fury of the populace, though he kept him concealed in womens cloaths, and distributed among the mob 200,000 pieces of money. He was therefore at last constrained to leave the city, attended by a guard of 100 men. Immediately after his departure, the mob plundered his house, and pursued him, so that he was obliged to exchange his camel for an ass, and thus with the utmost difficulty escaped into Syria.

In the mean time, Hosein Ebn Thamir, being returned into Syria with the forces under his command, gave a faithful account of the situation of affairs in Arabia to Merwan Ebn Al Hakem. He also acquainted him of the offer he had made to Abdallah of the oath of allegiance, which the latter had refused, or at least would not come to Damascus in order to be invested with the supreme authority there. On this account he advised Merwan to take care of himself and the rest of the house of Ommiyah, who had fled to Damascus after their expulsion from Medina. On this discourse Merwan was inclined to submit to Abdallah; but was diverted from it by Obeidallah, who insisted that no superior ought to be acknowledged by Merwan, who was at the head of the Koreish. The people of Damascus had constituted Dahak Ebn Kais their protector, who inclined to Abdallah. The Basrans were at this juncture entirely in tumult and confusion, not being able to agree about a protector after the expulsion of Obeidallah; so that at last they wrote to Abdallah, offering him the government of their territory. This he accepted, but could not be prevailed upon to stir from Mecca: nor could Merwan be persuaded to suffer any of the Syrians to perform the pilgrimage to Mecca, lest they should join Abdallah, and thereby contribute to his exclusion from the throne.

¹³²
Merwan
proclaimed
khalif at
Damascus.

In the midst of this confusion Abdallah might have easily secured the khalifat to himself, had he not with the utmost imprudence as well as inhumanity given orders for the extermination of the house of Ommiyah. This ruined his affairs; for they being now obliged to provide for their own safety, Merwan was proclaimed khalif at Damascus; and thus the whole Moslem empire was rent into two potent factions, the one under Merwan and the other under Abdallah.

We have already observed, that Dahak Ebn Kais

inclined to favour Abdallah. This he continued to do after Merwan was proclaimed khalif, insomuch that a battle soon ensued between his followers and those of Merwan, in which Dahak was defeated and killed; and thus Merwan became master of all the province of Syria. Soon after this victory, Merwan advanced with a considerable body of troops towards Egypt; but sent before him Amru Ebn Said with a detachment, in order to facilitate his passage. That general having defeated Abdalrahman, Abdallah's lieutenant, in several brisk actions, he at last surrendered the whole country to Merwan for a sum of money, and retired with the Arabs under his command to Hejaz. The Syrian troops, therefore, immediately took possession of that country, and obliged the inhabitants to take an oath of allegiance to Merwan; who having appointed his son Abdalazziz to preside over Egypt, returned with the greatest part of his forces to Damascus. Here he was informed that Abdallah had dispatched against him his brother Mufab with a considerable army. Against him Merwan dispatched Amru Ebn Said; who having soon come up with him, gave him a total defeat, and dispersed his troops in such a manner that Mufab found it impossible to rally them again.

Arabia.

¹³³
Abdallah's
forces de-
feated by
Merwan's.

¹³⁴
The Cufans

In the 65th year of the Hegira, the inhabitants of Cufa, pretending to be seized with remorse of conscience for their treachery to Hosein the son of Ali, raised an insurrection against both the khalifs, and therefore assembled a body of 16,000 men, under the command of one Soliman, who was to revenge the death of Hosein upon Obeidallah Ebn Ziyad and his adherents. But while Soliman and his troops remained yet inactive, Al Mokhtar, who had served under Abdallah, and was disgusted at not having been promoted as he expected, arrived at Cufa, and representing the incapacity of Soliman, who indeed appears to have been totally unfit for such an enterprize, offered to take the command upon himself. This, however, was refused; and as Al Mokhtar had no opinion of Soliman's military capacity, he found means to draw off 2000 of his troops; while 10,000 more chose rather to violate the oaths they had taken, than run the risk of being cut to pieces by a superior enemy. Soliman, however, put a good face upon the matter; and, telling his troops that they were to fight for another world and not this, set forward to invade Syria with the 4000 who remained with him: but being advanced as far as Ekfas upon the Euphrates, he found that he had lost 1000 men by desertion; nor was he joined by the Separatists of Basra and Al Madayen, though they had promised him a reinforcement. Firmly persuaded, however, that his cause was the cause of heaven, Soliman continued his march all night, and next day arrived at the tomb of Hosein, where his men performed their devotions with such enthusiasm of penitence, that one present swore he never saw such crowding about the black stone in the temple of Mecca itself.—Continuing still to advance, he received a friendly letter from Abdallah Ebn Yezid, the governor of Cufa, advising him to return, and representing to him the folly of engaging so powerful an army as would be sent against him, with an handful of men: but Soliman, imagining that he was only recalled in order to support Abdallah Ebn Zobeir in his pretensions to the khalifat, persisted

¹³⁵
Joined by
Al Mokhtar.

¹³⁶
Soliman's
folly and
enthusiasm.

in

Arabia.

in his resolution of penetrating into Syria. He told his troops, that they would never be nearer the two Huseins (Hosein, and his brother Hasan, to whom also the Shiites give that name) than they were at present; and that should they at this time meet with death, they would be in a state of repentance, and consequently could never die in a more proper time; and after this speech, continuing still to advance, he was at last met by Obeidallah at the head of 20,000 horse, who, after an obstinate engagement, cut to pieces Soliman and all his troops.

137
He is cut in
pieces with
all his men.

138
Merwan
dies.

Soon after this decisive action died the khalif Merwan, after he had reigned eleven months. He is said by some authors to have been poisoned by his wife Zeinab, Moawiyah's widow. Her he had married, with a promise that her son Khaled should succeed him; but afterwards altering the succession in favour of his own son Abdalmalec, young Khaled reproached him with his breach of promise: upon this Merwan calling him *bastard*, the child complained to his mother; who, to be revenged for this affront, is said to have poisoned him, or smothered him with a pillow.

In the beginning of the khalifat of Abdalmalec, Al Mokhtar, who had been imprisoned by the governor of Cufa, was released at the intercession of Abdallah Ebn Omar, who had married his sister. The year following, having put himself at the head of the Shiite sectaries, he sent proposals of alliance to Abdallah Ebn Zobeir; but he, justly suspecting his sincerity, by a stratagem cut off near 3000 of his men. Upon this disaster, Al Mokhtar, fearing the house of Ali might be intimidated, sent a letter to Mahomet Ebn Hanifyah, one of that family, in which he offered his assistance with a powerful army. This offer Mahomet declined, declaring himself only for pacific measures; but though he and all the rest of Ali's family behaved in the most peaceable manner, Abdallah did not think himself safe till they owned his authority. He therefore imprisoned them, together with 17 of the principal citizens of Cufa, whom he threatened to put to death, and afterwards burn their bodies, if they did not within a limited time take an oath of allegiance to him. Al Mokhtar being informed of the distressed situation they were in, sent a body of 750 horse to Mecca, under Abu Abdallah, to release them. That general not only executed his orders with great bravery, but took Abdallah himself prisoner, whom he would have cut to pieces on the spot, had he not been released at the intercession of Mahomet, who for the present adjusted the differences to the mutual satisfaction of all parties. After this reconciliation, Abu Abdallah, or rather Mahomet himself, distributed among 4000 of Ali's friends a sum of money brought for that purpose, in order to indemnify them for the losses they had sustained. Thus the friends of Ali were happily delivered, when only two days of the time granted them by Abdallah remained, and a sufficient quantity of wood and other combustibles was collected, in order to consume their bodies. Notwithstanding the reconciliation, however, that had lately taken place, Mahomet Ebn Hanifyah thought proper to post himself on a mountain near Mecca with a body of 4000 men.

The Cufans having received advice before Merwan's death, that he had sent Obeidallah with a powerful army towards their city, and even given him permis-

sion to plunder it in case it should be taken, appointed Yezid Ebn Ares, a man of undaunted courage, to oppose him; but Merwan dying before Obeidallah could execute his commission, an end was put for the present to this expedition. The memory of it, however, still remained; and Al Mokhtar, to whom Obeidallah was personally obnoxious, assembled a body of troops to act offensively against him, and even against the Syrian khalif himself in case he should support Obeidallah. Among other preparations for this enterprize, Al Mokhtar caused a kind of portable throne to be made, telling his troops, that, "it would be of the same use to them that the ark was to the children of Israel." It was therefore carried on a mule before the troops that were to march against Obeidallah, and the following prayer said before it: "O God! grant that we may live long in thy obedience; help us; and do not forget us, but protect us." This expedient was so well adapted to the hot-headed enthusiasts who composed Al Mokhtar's army, that they attacked Obeidallah's camp, defeated him, and again a complete victory. Obeidallah himself was killed in the action, his head sent to Al Mokhtar, and his body reduced to ashes.—By this victory the sectaries were rendered so formidable, that Nisibin or Nisibis, and several other cities, surrendered to them without opposition. They now began to entertain thoughts of deposing both the khalifs, and placing on the Moslem throne one of the family of Ali; but all their towering hopes were soon frustrated by the defeat and death of Al Mokhtar, by Musab brother to Abdallah Ebn Zobeir. Al Mokhtar, after being defeated in a general engagement by Musab, fled to the castle of Cufa, where he defended himself with great bravery for some time; but being at last killed, his men, to the number of 7000, surrendered at discretion, and were all of them put to the sword on account of the outrages they had committed.

The next year, the 68th of the Hegira, the Azarakites, so denominated from Nafe Ebn Al Azarak, the author of their sect, having assembled a considerable force, made an irruption into Irak. They advanced almost to the gates of Cufa, and penetrated to Al Madayen. Being sworn enemies of the house of Ommiyah, and acknowledging no government, spiritual or temporal, they committed terrible ravages in every part of the Moslem territories through which they passed. They carried their excesses to such a height as to murder all the people they met with, to rip open women with child, and commit every species of cruelty that could be invented upon the inhabitants without distinction. The governor of Mawfel and Mesopotamia, being informed of these unparalleled outrages, marched against them with a body of troops, and carried on a brisk war with them for eight months. During this period their leader Nafe Ebn Al Azarak died; and was succeeded by Katri Ebn Al Fojat, under whose conduct they continued their depredations. Musab not being pleased with his lieutenant's management of the war, recalled him, and sent in his place one Omar Ebn Abdallah Temimi, who gave the Azarakites a great overthrow at Naifabur in Khorasan, put many of them to the sword, and pursued the rest as far as Ispahan and the province of Kerman. Here having received a reinforcement, they returned into the province of Ahwaz, and did incredible damage to the country

Arabia.

140
Impiety of
Al Mokhtar.

141
Obeidallah
defeated
and killed.

142
Al Mokhtar
defeated
and killed
by Musab.

143
Horrid
cruelties
committed
by the Azarakites.

144
They are
defeated
and dispersed.

through

Arabia.

through which they passed. But Omar advancing against them a second time, they retired at his approach to Al Madayen, ravaging the district belonging to the city in a dreadful manner. However, Omar pursuing them thither also, they fled into the province of Kerman, and thence gradually dispersed themselves. This year there was a grievous famine in Syria, which suspended all military operations.

145
Barbarity
of Abdal-
malec.

The next year, being the 69th of the Hegira, Abdalmalec left Damascus to march against Musab. In his absence he left Amru Ebn Said governor of the city; but he immediately seized upon it for himself, which obliged the khalif to return. After several skirmishes had happened between some detachments of the khalif's troops with those of Amru, a pacification was concluded at the intercession of the women: but Abdalmalec barbarously put Amru to death with his own hand, notwithstanding his promise; and was immediately seized with such a tremor, that he lost the use of almost all his faculties, and was obliged to be laid in bed. In the mean time the palace was attacked by Yahyah, Amru's brother, at the head of 1000 slaves. After a warm dispute, they forced upon the gates, killed several of the guards, and were upon the point of entering the palace, when the people within threw Amru's head among them. This so cooled their ardour, that they desisted from the attempt; and some money having been afterwards distributed among them, they retired. So great, however, was Abdalmalec's avarice, that after the tumult was appeased, he recalled all the money which had been distributed, and commanded it to be deposited in the public treasury.

146
Disgrace-
ful treaty
with the
Greeks.

In the 70th year of the Hegira, the Greeks made an irruption into Syria; and Abdalmalec having occasion for all his forces to act against Abdallah Ebn Zobeir, was obliged to pay a tribute of 1000 dinars per day, according to Theophanes, and send every year 365 slaves and as many horses to Constantinople. In this treaty, it was also stipulated, that the revenues of Cyprus, Armenia, and Heria, should be equally divided between the khalif and the Greek emperor.

147
Musab de-
feated and
killed by
Abdalmalec.

Abdalmalec being now at leisure to pursue his intended expedition against Musab, marched against him in person; and having arrived at Masken, a small town on the frontiers of Mesopotamia, where he was waited for by Musab, the latter was defeated through the treachery of his troops, and himself killed. After the battle, Abdalmalec repaired to Cufa, where he was received with the utmost submission; and people of all ranks came in crowds to take the oath of allegiance to him. He then ordered vast sums of money to be distributed among them, and gave a splendid entertainment to his new subjects, to which even the meanest of them were not refused admittance. During this entertainment, the unfortunate Musab's head was presented to the khalif; upon which one of the company took occasion to say to him, "I saw Hosein's head in this same castle presented to Obeidallah; Obeidallah's to Al Mokhtar; Al Mokhtar's to Musab; and now at last Musab's to yourself." This observation so affected the khalif, that, either to avert the ill omen, or from some other motive, he ordered the castle to be immediately demolished. Abdallah Ebn Zobeir, in the mean time, having received the melancholy news of the defeat and death of his brother, assembled the people of Mecca,

and from the pulpit made a speech suitable to the occasion. He also did his utmost to put Mecca in a proper posture of defence, expecting a speedy visit from his formidable competitor, who now gave law to Irak, Syria, and Egypt, without controul.

Soon after Abdalmalec's return to Damascus, he appointed his brother Bashar governor of Cufa; and Khaled Ebn Abdallah governor of Basra. The latter had no sooner entered upon his office, than he indiscreetly removed from the command of the army Al Mohalleb, one of the greatest generals of the age; appointing in his room Abdalaziz, who was greatly his inferior in military skill. Of his dismissal the Azarakites being informed, they immediately attacked Abdalaziz, entirely defeated him, and took his wife prisoner. A dispute arising among the victors about the price of that lady, one of them, to end it, immediately cut off her head. Upon this disaster, Khaled was commanded to replace Al Mohalleb, which he did; and having in conjunction with him attacked the Azarakites, forced their camp and entirely defeated them.

148
Azarakites
defeated.

In the 72d year of the Hegira, Abdalmalec having no enemy to contend with but Abdallah Ebn Zobeir, made great preparations for an invasion of Hejaz, giving the command of the army to be employed on this occasion to Al Hejaj, one of his most warlike and eloquent captains. Before that general had put his army in march for Mecca, he offered his protection to all the Arabs there that would accept of it. Abdallah being informed of the enemy's approach, sent out several parties of horse to reconnoitre, and give him intelligence of the motions. Between these and some of Al Hejaj's advanced guards several skirmishes happened, in which Abdallah's men had generally the worst. This encouraged Al Hejaj to send to the khalif for a reinforcement, his troops amounting to no more than 2000 men, who were insufficient for reducing Mecca. He assured him at the same time, that Abdallah's fierceness was very much abated, and that his men deserted to him daily. The khalif, upon this, ordered a reinforcement of 5000 men under the command of Tharik Ebn Amer; but notwithstanding this additional strength, he made but little progress in the siege for some time. While he battered the temple of Mecca with his machines, it thundered and lightened so dreadfully, that the Syrians were struck with terror, and refused to play them any longer upon that edifice. Upon this Al Hejaj stuck the corner of his vest into his girdle, and putting into it one of the stones that were to be discharged out of the catapults, slang it into the town, and this occasioned the recommencement of the operations. The next morning the Syrians were annoyed by fresh storms, which killed 12 men, and quite dispirited them. Al Hejaj, however, animated them, by observing that he was a son of Tehama; that this was the storm of Tehama, and that their adversaries suffered as much as they. The day following some of Abdallah's men were killed by a very violent storm, which gave Al Hejaj a further opportunity of animating his troops. At last, Abdallah having been deserted by most of his friends, 10,000 of the inhabitants of Mecca, and even by his own sons Hamza and Khobeib, desired to know his mother's sentiments as to what course he was to take. He represented to her, that he was almost entirely abandoned by his subjects and relations; that the few who

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Mecca be-
sieged by
Al Hejaj.

Arabia.

who persisted in their fidelity to him could scarce enable him to defend the city any longer; and that the Syrian khalif would grant him any terms he should think fit to demand. His mother, however, being of an inflexible resolution, and not able to bear the thoughts of seeing her son reduced to the rank of a private person, being herself the daughter of Abu Beer the first khalif, advised him by no means to survive the sovereignty, of which he was on the point of being deprived. This advice being agreeable to his own sentiments, he resolved to die in defence of the place. In pursuance of this resolution, he defended the city, to the amazement of the besiegers, for ten days, though destitute of arms, troops, and fortifications. At last, having taken a final leave of his mother, and being animated by despair, he made a sally upon the enemy, destroyed a great number of them with his own hand, and was at length killed fighting valiantly upon the spot. At the last interview he had with his mother, she is said to have desired him to put off a coat of mail he had on for his defence; and, in order to inspire him with the greater fortitude, she gave him a draught in which a whole pound of musk had been infused. Al Hejaj ordered his head to be cut off, and his body to be affixed to a cross; and by reason of the musk he had drank, the body emitted a grateful odour for several days.

150
Abdallah
killed.

By the reduction of Mecca, and the death of Abdalla Ebn Zobeir, Abdalmalec remained sole master of the Moslem empire; but he sustained a great loss next year, in having an army of 100,000 men totally cut off by the Khazarians in Armenia. The governor, however, having marched in person against them at the head of only 40,000 men, but all chosen troops, penetrated into the heart of Armenia, defeated and dispersed a large body of the Khazarians, drove them into their temples, and reduced them to ashes. One of his generals also defeated an army of 80,000 Khazarians at the Iron or Caspian gates, and destroyed a great number of them, obliging the rest to embrace the Mahometan religion.

151
Khazarians
reduced.

152
Cruelty of
Al Hejaj.

Al Hejaj, in consequence of his services, was made governor, first of Medina, and then of Irak, Khorasan, and Sijistan; in all which places he behaved with the greatest cruelty. Having entered the city of Cufa muffled up in his turban, he was surrounded by crowds of people who pressed forward to see him. He told them their curiosity would soon be gratified; which he effectually did, by ascending the pulpit, and treating them in a very coarse manner; swearing that he would make the wicked bear his own burden, and fit him with his own shoe; and telling them, among other things, that "he imagined he saw the *heads* of men ripe and ready to be gathered, and turbans and beards besprinkled with blood." At Basra he made a speech much to the same purpose; and, to give the inhabitants a taste of his discipline, caused one of them who had been informed against as a rebel to be beheaded on the spot without any trial. So great indeed was the abhorrence in which he was held by those over whom he presided, that having once recommended himself to the prayers of a religious Moslem, the latter instantly prayed that it would please God to kill Al Hejaj quickly; "for nothing, said he, could be more advantageous for himself or the people." In consequence of these cruelties, rebellions were soon raised

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against him; but they were easily suppressed, and Al Hejaj continued in the full enjoyment of all his employments till he died.

In the 76th year of the Hegira, one Saleh Ebn Marj, a hot-headed enthusiast, and Shebib Ebn Zeid, a Kharejite, took up arms against the khalif. They had conspired against him the year before when on a pilgrimage to Mecca; and Al Hejaj had been ordered to seize them: but at that time they found means to make their escape; and having now assembled about 120 men, Saleh was proclaimed emperor of the faithful at Daras in Mesopotamia. The governor soon received intelligence of their motions; and ordered a body of 500 men, under the command of one Adi, to march against them: but that general, being afraid to attack them notwithstanding his superiority in numbers, demanded a reinforcement. He therefore was supplied with 500 more troops, with which he advanced to Daras: but being still afraid of the rebels, he entered into negotiations with them; during which they attacked him, entirely defeated his army, and made themselves masters of his camp. Upon this the governor sent a detachment of 1500 horse against them; but the rebels, notwithstanding the smallness of their number, defended themselves in a such a manner, that the khalif's troops were forced to dismount and fight on foot. The engagement continued till night; when the rebels, finding themselves unable to contend with such numbers, retired to Mawfel. After this, Al Hejaj being informed that they had taken post at Dascara, sent against them an army of 5000 men. The rebels, hearing of this formidable army, abandoned their camp; but were so closely pursued, that they found themselves obliged to stand an engagement at Modbaj, a small village on the Tigris. Saleh's forces, consisting only of three companies of 30 men each, were soon thrown into disorder, and himself killed: but Shebib made an excellent retreat to a neighbouring castle; from whence he sallied out at midnight on the khalif's forces, penetrated to the very heart of the camp, where he wounded the general himself, and dispersed the greatest part of his army.

153
Saleh and
Shebib re-
bel.

154
Their bra-
very.

155
Saleh killed;

156
Al Hejaj
defeated by
Shebib.

157
Shebib's
valour and
death.

After this victory, the rebels became terrible even to Al Hejaj himself, whom they afterwards defeated in several engagements; and taking advantage of his being at Basra, made themselves masters of Cufa with little opposition. Al Hejaj was now constrained to write to the khalif for a strong detachment of the Syrian troops, with which he advanced against Shebib; whose army bearing no proportion to that of Al Hejaj, the former was totally defeated, had his wife's brother killed in the action, and was obliged to fly into Kerman. Having refreshed his men in this province, he again advanced to Ahwaz, where he was met by one of Al Hejaj's generals at the head of the Syrian army. Shebib defended himself with incredible valour, and several times repulsed the khalif's forces; but being overpowered by numbers, as his army consisted of no more than 600 men, he was at last put to flight, and, in passing a bridge, was thrown off by his horse and drowned. His body was drawn up by a net, and the head sent to Al Hejaj, who was not a little pleased at the sight. After his death, the rebels quarrelled among themselves, so that the khalif's troops cut off the greatest part of them. The remainder, under Katri Ebn Fojat, fled to Tabrestan. Here they were kind-

Z

ly

Arabia.

158
Ingratitude
of the re-
bels.

159
They are
all destroy-
ed.

160
Money first
coined in
Arabia.

161
Carthage
demolished.

162
200,000 A-
rabs de-
stroyed by
Heraclius.

163
Abdalmalec
dies.

ly received by Ashid the king, who assigned them a part of his territories for their habitation. But they had not been long settled before they insisted upon Ashid's either embracing Mahometanism, or paying them an annual tribute; which he refusing, they drove him into Irak, where he employed the khalif's protection. Ashid afterwards conducted a body of Moslem troops into Tabrestan; where they fell upon the rebels with such fury, that they killed Katri himself, cut a great number of his men to pieces, and took all the rest prisoners.

This year also (the 76th of the Hegira) money was first coined in Arabia. Before this time, the dinars, or gold coins, had Greek inscriptions; and the dirhems, or silver ones, Persic inscriptions. The first erection of a mint in Arabia was occasioned by the following accident. Abdalmalec added to the letters he wrote to the Greek emperor this short passage of the Koran, "Say, God is one;" or "Say, there is one God;" and then inserted the year of the Hegira, with the name of the prophet, in such a manner as gave the emperor great offence. Upon this he wrote to Abdalmalec, desiring him to alter that manner of writing, or he would send him some coins in which the name of Mahomet should be mentioned in such a manner as would not prove very agreeable. Abdalmalec now resolved to coin money of his own; and accordingly some dirhems were this year stamped by Al Hejaj, with the inscription *Alla Samad*, "God is eternal;" which gave great offence to the superstitious Moslems, as they imagined that the name of God would be thereby profaned by the touch of unclean persons.

In the 77th year of the Hegira, the Arabs made an incursion into the imperial territories, and had Lazica and Bernucium betrayed to them; and the next year they made themselves masters of Africa Propria, demolishing the city of Carthage so effectually, that scarce a vestige of it was left. They were soon driven out, however, by John the Patrician, a man of great valour and experience in war; but returning with a superior force, they obliged John in his turn to fly to Constantinople.

The 79th year of the Hegira is remarkable for nothing but the rebellion of Abdalrahman in Persia; who drove the Khakan, or emperor of the Turks, Tartars, or Moguls, out of that country: but the following year, one of the Greek generals named *Heraclius* penetrated into Syria as far as Samosata, and destroyed 200,000 Arabs, ravaging the country in a terrible manner; and Abdalrahman was defeated and killed by Al Hejaj, after a great number of engagements, some say 81, and others 100. In the 83d year of the Hegira, the nobility of Armenia revolting, drove the Arabs out of that province; but Mahomet, one of the khalif's generals, entering the country with a powerful army, got the authors of the revolt into his hands, and caused them all to be burnt alive. Encouraged by this success, the Moslems invaded Cilicia under one Azar; but were, to the number of 10,000, cut in pieces by Heraclius; and the next year, having again entered that country, 12,000 of them were destroyed by the same general, and the rest forced to fly into their own country.

In the 86th year of the Hegira died the khalif Abdalmalec, after a reign of 21 years. He is said to

have had such a stinking breath, that the flies which accidentally settled on his lips were almost instantly struck dead by it. He was succeeded by Al Walid, who greatly extended the Moslem dominions. The first year of his reign, one of his generals having passed the Oxus (now the Jihum), defeated a numerous army of Turks and Tartars. He then over-ran and entirely reduced the countries of Sogd or Sogdiana, Bagrals, Shash, Targana, and the whole immense tract going under the name of Mawaralnahr, or great Buckharia. He also conquered the khan of Khowarazim, obliging him to pay an annual tribute of two millions of dinars. About the same time another general called *Mahomet* made an irruption into India, and subdued a considerable part of that country. He also entirely subdued the kingdom of Al Sind, lying between Persia and India. In this expedition, Derar king of Al Sind was defeated and killed, and had his head cut off by Mahomet.

In the 90th year of the Hegira, the Moslems made an irruption into Cappadocia, defeated the emperor's army who opposed them, and took the city of Tyana. The next year they made another incursion into the imperial territories, whence they carried off vast numbers of slaves; and the year following one Othman penetrated into the heart of Cilicia, where he made himself master of several cities, but does not appear to have long kept his conquests.

In the 93d year of the Hegira, answering to that of Christ 712, Tarek Ebn Zarka made a descent in Spain, defeated Roderic the last king of the Goths, reduced the city of Toledo, and over-ran a considerable part of the kingdom. Being afterwards joined by Musa, commander of the African Moslems, the two generals made themselves masters of most of the fortresses, subjugating in a manner the whole country, and obliging it to pay tribute to the khalif. In these expeditions the Moslems acquired spoils of immense value; and, amongst other things, an exceeding rich table, called by the Arab writers "the table of Solomon the son of David." According to these writers, this table consisted entirely of gold and silver, and was adorned with three borders of pearls; but Roderic of Toledo, a Spanish historian, says it consisted of one entire stone, of a green colour, and of an immense size, having no less than 365 feet. He adds, that it was found in a certain village or town, near the mountain called in his days *Jibal Soliman*, or "the mountain of Solomon."

After Musa and Tarik had committed dreadful depredations in Spain, they were both recalled by the khalif; but the next year, Tarik having undertaken another expedition into the same country, landed a body of 12,000 men at Gibraltar, with which he plundered the whole province of Bætica, and over-ran the greatest part of Lusitania. Roderic hearing of these depredations, sent against him an army of raw undisciplined troops, who were easily defeated, and most of them left dead on the spot; which so animated the Arab commander, that he resolved not to lay down his arms till he had made an absolute conquest of Spain. About the same time that Tarif made such progress in Spain, another Moslem general entered Pisidia with a powerful army, took the city of Antioch, and, after having ravaged the country, retired into the khalif's territories with very little loss.

Arabia.

164
Prodigious
conquests
of the Mo-
slems.

165
They make
a descent
on Spain,

166
And over-
run the
whole
country.

Arabia
167
Al Hejaj
dies.

In the 95th year of the Hegira died Al Hejaj governor of Irak, &c. after he had presided over that country 20 years. He exercised such cruelties upon those who were in subjection to him, that he is said to have killed 120,000 men, and to have suffered 50,000 men and 30,000 women to perish in prison. To excuse this cruelty, he used frequently to say, That a severe, or even violent government, is better than one too weak and indulgent; as the first only hurts particular persons, but the latter the whole community. This year also the Arabs gained a complete victory in Spain over Roderic king of the Goths, who perished in the action. In this campaign, Tarif possessed himself of immense treasures; by which means he was enabled to reward not only his officers, but common soldiers also. In the eastern parts of the world also, the Arabs were this year very formidable; Moslema, an Arab general, having entered the imperial territories, ravaged the whole province of Galatia, carrying off with him many rich spoils, and a vast number of prisoners. The Greek emperor, hearing that Al Walid designed to attack him both by sea and land, sent some of his nobles to treat of a peace; and, among other things, desired them to bring him a particular account of the force with which the khalif designed to invade the Greek empire. This they represented as so terrible, that it would be next to impossible to oppose it. The emperor therefore caused a great number of light ships to be built, the walls to be repaired, and ordered such of the citizens as had not laid up provisions for three years to depart the city. Al Walid, in the mean time, continued his warlike preparations with the utmost vigour, being determined to make himself master of Constantinople in a single campaign.

168
Al Walid
dies, and is
succeeded
by Soliman.

In the 96th year of the Hegira died the khalif Al Walid; and was succeeded by his brother Soliman. This year the Moslem conquests on the east side were increased by the reduction of Tabrestan and Jurgan or Georgiana. In Spain, also, the city of Toledo which had revolted was reduced, and Cæsar-Augusta, now Saragossa, as well as several others. The next year Moslema set out for Constantinople, which he besieged without success till the 99th year of the Hegira; at which time he was obliged to return, after having lost before it 120,000 men. The soldiers were reduced to the greatest extremities of hunger, being forced to live upon hides, the roots and bark of trees, the most noxious animals, and even the dead bodies of their companions. This year also (the 99th of the Hegira) is remarkable for the death of the khalif Soliman. According to some, he was poisoned by Yezid his brother, governor of Persia, who was displeased with his having appointed his cousin-german, Omar Ebn Abdalaziz, as his successor, to the exclusion of himself. According to others, he died of an indigestion; which is not greatly to be wondered at, if, as those authors say, he used to devour 100 pounds weight of meat every day, and dine very heartily after eating three lambs roasted for breakfast. In the latter part of his reign, the Moslems were by no means successful in Spain: the kingdom of Navarre being founded at this time by Pelagius, or Pelayo, whom the Arabs were never able to reduce.

169
Constanti-
nople, un-
successfully
besieged.

170
Death of
Soliman.

The new khalif Omar Ebn Abdalaziz was by no means of a martial character; but is said to have been

very pious, and possessed of very amiable qualities. He suppressed the usual malediction, which was solemnly pronounced by the khalifs of the house of Ommiyah against the house of Ali; and always showed great kindness to the latter. He was poisoned by Yezid, after a short reign of two years and five months. It is related, as an instance of this khalif's humility, that when Moslema visited him in his last sickness occasioned by the poison, he lay upon a bed of palm-tree leaves, supported by a pillow formed of beasts skins, and covered with an ordinary garment. He had also on a dirty shirt; for which Moslema blamed his sister Fatima, Omar's wife; but she excused herself by telling him, that the emperor of the faithful had not another shirt to put on.

Concerning Yezid the successor of Omar we find very little worth mentioning. He did not long enjoy the dignity he had so iniquitously purchased, dying after a reign of little more than four years. He died of grief for a favourite concubine named *Hababah*, who was accidentally choked by a large grape which stuck in her throat.

Yezid was succeeded by his brother Hesham, who ascended the throne in the 105th year of the Hegira. In the second and third year of his reign, several incursions were made into the imperial territories, but generally without success. In the 109th year of the Hegira, Moslema drove the Turks out of Armenia and Aderbijan, and again confined them within the Caspian gates. The next year he obliged them to take an oath that they would keep their own country; but this they soon violated, and were again driven back by Moslema. About this time also the Arabs, having passed the Pyrenees, invaded France to the number of 400,000, including women and slaves, under the command of one Abdalrahman. Having advanced to Arles upon the Rhone, they defeated a large body of French that opposed them; and having also defeated Count Eudo, they pursued him through several provinces, wasted the whole country with fire and sword, making themselves masters of the city of Tours, most of which they reduced to ashes. Here, however, a stop was put to their devastations by Charles Martel; who, coming up with them near the above-mentioned city, engaged them for seven days together, and at last gave them a total overthrow. The French general made himself master of all their baggage and riches; and Abdalrahman, with the shattered remains of his army, reached the frontiers of Spain with the utmost difficulty. The following year also, according to some historians, the Arabs were overthrown at Illiberis, scarce any of them making their escape. To make amends for this bad fortune, however, the khalif's arms were successful against the Turks, who had again invaded some of the eastern provinces.

In the 125th year of the Hegira died the khalif Hesham, after a reign of 19 years, seven months, and eleven days. He was succeeded by Al Walid II. who is represented as a man of a most dissolute life, and was assassinated the following year on account of his professing *Zendicizm*, a species of infidelity nearly resembling Sadducism. He was succeeded by Yezid the son of Al Walid I. who died of the plague, after a reign of six months; and was succeeded by Ibrahim Ebn Al Walid, an imprudent and stupid prince. He was depo-

Arabia.

171
New khalif
poisoned.

172
The Turks
defeated.

173
France in-
vaded by
the Arabs.

174
They are
utterly de-
stroyed by
Charles
Martel.

Arabia.

175
Reign of
Merwan.

fed in the 127th year of the Hegira by Merwan Ebn Mahomet, the governor of Mesopotamia; who gave out as an excuse for his revolt, that he intended to revenge the murder of the khalif Al Walid II. He was no sooner seated on the throne, than the people of Hems rebelled against him. Against them the khalif marched with a powerful army; and asking them what could excite them to this rebellion, summoned them to surrender. They assured him that they were disposed to admit him into their city; and, accordingly, one of the gates being opened, Merwan entered with about 300 of his troops. The men that entered with him were immediately put to the sword; and the khalif himself escaped with great difficulty. However, he afterwards defeated them in a pitched battle, put a great number of them to the sword, dismantled the city, and crucified 600 of the principal authors of the revolt.

This, however, was far from quieting the commotions in different parts of the empire. The inhabitants of Damascus soon followed the example of those of Hems, and deposited the khalif's governor; but Merwan, immediately after the extinction of the former rebellion, marched to Damascus with great celerity, entered the city by force, and brought to condign punishment the authors of the revolt. Peace, however, was no sooner established at Damascus, than Soliman Ebn Hesham set up for himself at Bafar, where he was proclaimed khalif by the inhabitants. Here he assembled an army of 10,000 men, with whom he marched to Kinniffin, where he was joined by vast numbers of Syrians who flocked to him from all parts. Merwan, receiving advice of Soliman's rapid progress, marched against him with all the forces he could assemble, and entirely defeated him. In this engagement Soliman lost 30,000 men; so that he was obliged to fly to Hems, where 900 men took an oath to stand by him to the last. Having ventured, however, to attack the khalif's forces a second time, he was defeated, and again forced to fly to Hems. But being closely pursued by Merwan, he constituted his brother Said governor of the city, leaving with him the shattered remains of his troops, and himself fled to Tadmor. Soon after his departure Merwan appeared before the town, which he besieged for seven months; during which time he battered it incessantly with 80 catapults. The citizens, being reduced to the last extremity, surrendered, and delivered Said into the khalif's hands. In consideration of this submission, Merwan pardoned the rebels, and took them all under his protection. About the same time, another pretender to the khalifat appeared at Cufa; but Merwan took his measures so well, that he extinguished this rebellion before it could come to any height.

176
A party
formed a-
gainst him
in Khoras-
an.

Notwithstanding the success, however, that had hitherto attended Merwan, a strong party was formed against him in Khorasan by the house of Al Abbas. The first of that house that made any considerable figure was named *Mahomet*, who flourished in the reign of Omar Ebn Abdalaziz. He was appointed chief of the house of Al Abbas about the hundredth year of the Hegira; and is said to have prophesied, that after his death, one of his sons, named *Ibrahim*, should preside over them till he was killed, and that his other son Abdallah, surnamed *Abul Abbas Al Saffah*, should be khalif, and exterminate the house of Ommiyah. Upon

this Al Saffah was introduced as the future sovereign, and those present kissed his hands and feet.

Arabia.

After the decease of Mahomet, his son Ibrahim nominated as his representative in Khorasan one Abu Moslem, a youth of 19 years of age; who beginning to raise forces in that province, Merwan dispatched against him a body of horse under the command of Nasr Ebn Sayer; but that general was entirely defeated by Abu Moslem, and the greatest part of his men killed. The next year (the 128th of the Hegira) Merwan made vast preparations to oppose Abu Moslem, who after the late victory began to grow formidable to several parts of the empire. According to some authors, Merwan gained two victories over some of Ibrahim's generals; but the year following, Abu Moslem brought such a formidable army into the field, that the khalif's troops could not make head against them; his officers in Khorasan therefore were obliged either to take an oath of allegiance to Ibrahim, or to quit the province within a limited time.

177
Merwan's
forces de-
feated.

In the 130th year of the Hegira, the khalif's general Nasr having drawn together another army, was again defeated by Kahtaba another of Ibrahim's generals, and forced to fly to Raya, a town of Dylam, according to some, or of Khorasan, according to others. The next year Ibrahim having foolishly taken it into his head to go on a pilgrimage to Mecca, attended by a numerous retinue splendidly accoutred, was seized and put to death by Merwan; and the year following Abul Abbas was proclaimed khalif at Cufa. As soon as the ceremony was ended, he sent his uncle Abdallah with a powerful army to attack Merwan's forces that were encamped near Tubar at a small distance from Mosul, where that khalif was then waiting for an account of the success of his troops under Yezid governor of Irak against Khatahba one of Al Saffah's general's. Khatahba receiving advice of Yezid's approach, immediately advanced against him, and entirely defeated him; but in crossing the Euphrates, the waters of which were greatly swelled, he was carried away by the current and drowned. The pursuit, however, was continued by his son Hamid, who dispersed the fugitives in such a manner that they could never afterwards be rallied. At the news of this disaster, Merwan was at first greatly dispirited; but soon recovering himself, he advanced to meet Abdallah. In the beginning of the battle, the khalif happened to dismount; and his troops perceiving their sovereign's horse without his rider, concluded that he was killed, and therefore immediately fled; nor was it in the power of the khalif himself to rally them again, so that he was forced to fly to Damascus: but the inhabitants of that city, seeing his condition desperate, shut their gates against him. Upon this he fled to Egypt, where he maintained himself for some time; but was at last attacked and killed by Saleh, Abdallah's brother, in a town of Thebair, called *Busir Kurides*. The citizens of Damascus, though they had shamefully deserted Merwan, refused to open their gates to the victors; upon which Saleh entered the city by force, and gave it up to be plundered for three days by his soldiers.

178
Ibrahim put
to death.179
Merwan
himself de-
feated.180
And killed.

By the total defeat and death of Merwan, Al Saffah remained sole master of the Moslem throne; but we hear of no very remarkable events that happened during his

Arabia.

181
Reign of Al
Manfur.182
He mur-
ders Abu
Moslem.183
Adbalah-
man pro-
claimed
khalif in
Spain.184
Attempt to
assassinate
the khalif.

his reign: only that he massacred great numbers of the partisans of the house of Ommiyah; and that Constantine Copronymus, taking advantage of the intestine divisions among the Moslems, ravaged Syria. The khalif died of the small-pox in the 136th year of the Hegira, in the 33d year of his age; and was succeeded by his brother Al Manfur. In the beginning of Al Manfur's reign, hostilities continued against the house of Ommiyah, who still made resistance, but were always defeated. Abdallah, however, the khalif's uncle, caused himself to be proclaimed khalif at Damascus; and having assembled a powerful army in Arabia, Syria, and Mesopotamia, advanced with great expedition to the banks of the Masius near Nisibus, where he encamped. Al Manfur, being informed of this rebellion, dispatched Abu Moslem against Abdallah. This general, having harassed him for five months together, at last brought him to a general action; and having entirely defeated him, forced him to fly to Basra. Notwithstanding all his services, however, Abu Moslem was soon after ungratefully and barbarously murdered by Al Manfur, on some ridiculous pretences of being deficient in respect towards him.

After the death of Abu Moslem, one Sinan a Magian, or adorer of fire, having made himself master of that general's treasures, revolted against the khalif; but he was soon defeated by Jamhur Ebn Morad, who had been sent against him with a powerful army. In this expedition Jamhur having acquired immense riches, the covetous disposition of the khalif prompted him to send a person express to the army to seize upon all the wealth. This so provoked Jamhur, that he immediately turned his arms against his master; but was soon defeated, and entirely reduced. The following year (the 139th of the Hegira), one Adbalahman, of the house of Ommiyah, after the entire ruin of that family in Asia, arrived in Spain, where he was acknowledged khalif; nor did he or his descendants ever afterwards own subjection to the Arabian khalifs.

The 140th year of the Hegira is remarkable for an attempt to assassinate the khalif. This attempt was made by the Rawandians; an impious sect, who held the doctrine of metempsychosis or transmigration.—They first offered Al Manfur divine honours, by going in procession round his palace, as the Moslems were wont to do round the Caab; but the khalif, highly incensed at this impiety, ordered 100 of the principal of them to be imprisoned. These, however, were soon released by their companions; who then went in a body to the palace with an intention to murder their sovereign: but he being a person of uncommon bravery, though he was surprised with very few attendants, mounted a mule, and advanced towards the mutineers, with an intention to sell his life as dear as possible. In the mean time, Maan Ebn Zaidat, one of the chiefs of the Ommiyah faction, who had concealed himself in order to avoid the khalif's resentment, sallied out of his retreat, and putting himself at the head of Al Manfur's attendants, charged the rebels with such fury, that he entirely defeated them. This generosity of Maan was so remarkable, that it afterwards passed into a proverb. On this occasion 6000 of the Rawandians were killed on the spot, and the khalif delivered from instant death: he was, however, so much disgusted with the Arabs on account of this attempt, that

he resolved to remove the capital of his empire out of their peninsula; and accordingly founded a new city on the banks of the Tigris, which from that time to this has been known by the name of *Bagdad*. The foundations of it were laid in the 145th year of the Hegira, and finished four years after.

On the removal of the seat of government to Bagdad, the peninsula of the Arabs seems all at once to have lost its consequence, and in a short time the inhabitants seem even to have detached themselves from the jurisdiction of the khalif's: for in the 156th year of the Hegira, while Al Manfur was yet living, they made irruptions into Syria and Mesopotamia, as if they had designed to conquer these countries over again for themselves; and though the Arabs, properly so called, continued nominally subject to the khalifs of Bagdad till the abolition of the khalifat by Hulaku the Tartar, yet they did not become subject to him when he became master of that city. There is even the strongest reason to believe that the Arabs (i. e. the inhabitants of the peninsula properly called *Arabia*) have remained independent, not only of Hulaku, but of every other conqueror that the world hath yet produced.

The perpetual independence of the Arabs, indeed, "has been the theme of praise among strangers and natives. The kingdom of Yemen, it is true, has been successively subdued by the Abyssinians, the Persians, the sultans of Egypt, and the Turks; the holy cities of Mecca and Medina have repeatedly bowed under a Scythian tyrant; and the Roman province of Arabia embraced the peculiar wilderness in which Ismael and his sons must have pitched their tents in the face of their brethren. Yet these exceptions are temporary or local; the body of the nation has escaped the yoke of the most powerful monarchies: the arms of Sesostris and Cyrus, of Pompey and Trajan, could never achieve the conquest of Arabia; the present sovereign of the Turks may exercise a shadow of jurisdiction, but his pride is reduced to solicit the friendship of a people whom it is dangerous to provoke and fruitless to attack. The obvious causes of their freedom are inscribed on the character and country of the Arabs. Many ages before Mahomet, their intrepid valour had been severely felt by their neighbours in offensive and defensive war. The patient and active virtues of a soldier are insensibly nursed in the habits and discipline of a pastoral life. The care of the sheep and camels is abandoned to the women of the tribe; but the martial youth under the banner of the emir, is ever on horseback, and in the field, to practise the exercise of the bow, the javelin, and the scymetar. The long memory of their independence is the firmest pledge of its perpetuity; and succeeding generations are animated to prove their descent and to maintain their inheritance. Their domestic feuds are suspended on the approach of a common enemy; and in their last hostilities against the Turks, the caravan of Mecca was attacked and pillaged by fourscore thousand of the confederates. When they advanced to battle, the hope of victory is in the front; and in the rear, the assurance of a retreat. Their horses and camels, who in eight or ten days can perform a march of four or five hundred miles, disappear before the conqueror; the secret waters of the desert elude his search; and his victorious troops are consumed with thirst, hunger, and fatigue,

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the seat of
empire to
Bagdad.

Gibbon's
Hist. vol. v.
p. 178.
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ence of the
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in the pursuit of an invisible foe, who scorns his efforts, and safely reposes in the heart of the burning solitude. The arms and desarts of the Bedowees are not only the safeguards of their own freedom, but the barriers also of the Happy Arabia, whose inhabitants, remote from war, are enervated by the luxury of the soil and climate. The legions of Augustus melted away in disease and lassitude; and it is only by a naval power that the reduction of Yemen has been successfully attempted. When Mahomet erected his holy standard, that kingdom was a province of the Persian empire; yet seven princes of the Homerites still reigned in the mountains; and the vicegerent of Chosroes was tempted to forget his distant country and his unfortunate master. The historians of the age of Justinian represent the state of the independent Arabs, who were divided by interest or affection in the long quarrel of the East: the tribe of Gassan was allowed to encamp on the Syrian territory: the princes of Hira were permitted to form a city about forty miles to the southward of the ruins of Babylon. Their service in the field was speedy and vigorous; but their friendship was venal, their faith inconstant, their enmity capricious: it was an easier task to excite than to disarm these roving barbarians; and, in the familiar intercourse of war, they learned to see, and to despise, the splendid weakness both of Rome and of Persia. From Mecca to the Euphrates, the Arabian tribes were confounded by the Greeks and Latins, under the general appellation of Saracens; a name which every Christian mouth has been taught to pronounce with terror and abhorrence.

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Their domestic freedom and character.

"The slaves of domestic tyranny may vainly exult in their national independence; but the Arab is personally free; and he enjoys, in some degree, the benefits of society, without forfeiting the prerogatives of nature. In every tribe, superstition, or gratitude, or fortune, has exalted a particular family above the heads of their equals. The dignities of sheich and emir invariably descend in this chosen race; but the order of succession is loose and precarious; and the most worthy or aged of the noble kinsmen are preferred to the simple, though important, office of composing disputes by their advice, and guiding valour by their example. The momentary junction of several tribes produces an army: their more lasting union constitutes a nation; and the supreme chief, the emir of emirs, whose banner is displayed at their head, may deserve, in the eyes of strangers, the honours of the kingly name. If the Arabian princes abuse their power, they are quickly punished by the desertion of their subjects, who had been accustomed to a mild and parental jurisdiction. Their spirit is free, their steps are unconfined, the desert is open, and the tribes and families are held together by a mutual and voluntary compact. The softer natives of Yemen supported the pomp and majesty of a monarch; but if he could not leave his palace without endangering his life, the active powers of government must have been devolved on his nobles and magistrates. The cities of Mecca and Medina present, in the heart of Asia, the form or rather the substance of a commonwealth. The grandfather of Mahomet, and his lineal ancestors, appear in foreign and domestic transactions as the princes of their country; but they reigned like Pericles at Athens, or the Medici at Florence, by the opinion of

their wisdom and integrity; their influence was divided with their patrimony: and the sceptre was transferred from the uncles of the prophet to a younger branch of the tribe of Koreish. On solemn occasions they convened the assembly of the people; and, since mankind must be either compelled or persuaded to obey, the use and reputation of oratory among the ancient Arabs is the clearest evidence of public freedom. But their simple freedom was of a very different cast from the nice and artificial machinery of the Greek and Roman republics, in which each member possessed an undivided share of the civil and political rights of the community. In the more simple state of the Arabs, the nation is free, because each of her sons disdains a base submission to the will of a master. His breast is fortified with the austere virtues of courage, patience, and sobriety: the love of independence prompts him to exercise the habits of self-command; and the fear of dishonour guards him from the meaner apprehension of pain, of danger, and of death. The gravity and firmness of the mind is conspicuous in its outward demeanor: his speech is slow, weighty, and concise; he is seldom provoked to laughter; his only gesture is that of stroking his beard, the venerable symbol of manhood; and the sense of his own importance teaches him to accost his equals without levity, and his superiors without awe. The liberty of the Saracens survived their conquests: the first khalfs indulged the bold and familiar language of their subjects: they ascended the pulpit to persuade and edify the congregation; nor was it before the seat of empire was removed to the Tigris, that the Abbassides adopted the proud and pompous ceremonial of the Persian and Byzantine courts.

"In the study of nations and men, we may observe the causes that render them hostile or friendly to each other, that tend to narrow or enlarge, to mollify or exasperate, the social character. The separation of the Arabs from the rest of mankind has accustomed them to confound the ideas of stranger and enemy; and the poverty of the land has introduced a maxim of jurisprudence, which they believe and practise to the present hour. They pretend, that in the division of the earth the rich and fertile climates were assigned to the other branches of the human family; and that the posterity of the outlaw Ismael might recover, by fraud or force, the portion of inheritance of which he had been unjustly deprived. According to the remark of Pliny, the Arabian tribes are equally addicted to theft and merchandise: the caravans that traverse the desert are ransomed or pillaged; and their neighbours, since the remote times of Job and Sesostris, have been the victims of their rapacious spirit. If a Bedoween discovers from afar a solitary traveller, he rides furiously against him, crying, with a loud voice, "Undress thyself, thy aunt (*my wife*) is without a garment." A ready submission intitles him to mercy; resistance will provoke the aggressor, and his own blood must expiate the blood which he presumes to shed in legitimate defence. A single robber, or a few associates, are branded with their genuine name; but the exploits of a numerous band assume the character of lawful and honourable war. The temper of a people, thus armed against mankind, was doubly inflamed by the domestic licence, of rapine, murder, and revenge. In the constitution of Europe, the right of peace and war is

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Civil wars and private revenge.

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now confined to a small, and the actual exercise to a much smaller, list of respectable potentates; but each Arab, with impunity and renown, might point his javelin against the life of his countryman. The union of the nation consisted only in a vague resemblance of language and manners; and in each community the jurisdiction of the magistrate was mute and impotent. Of the time of ignorance which preceded Mahomet, 1700 battles are recorded by tradition: hostility was embittered with the rancour of civil faction; and the recital, in prose or verse, of an obsolete feud was sufficient to rekindle the same passions among the descendants of the hostile tribes. In private life, every man, at least every family, was the judge and avenger of its own cause. The nice sensibility of honour, which weighs the insult rather than the injury, sheds its deadly venom on the quarrels of the Arabs: the honour of their women, and of their *beards*, is most easily wounded; an indecent action, a contemptuous word, can be expiated only by the blood of the offender; and such is their patient inveteracy, that they expect whole months and years the opportunity of revenge. A fine or compensation for murder is familiar to the barbarians of every age: but in Arabia the kinsmen of the dead are at liberty to accept the atonement, or to exercise with their own hands the law of retaliation. The refined malice of the Arabs refuses even the head of the murderer, substitutes an innocent to the guilty person, and transfers the penalty to the best and most considerable of the race by whom they have been injured. If he falls by their hands, they are exposed in their turn to the danger of reprisals; the interest and principal of the bloody debt are accumulated; the individuals of either family lead a life of malice and suspicion, and 50 years may sometimes elapse before the account of vengeance be finally settled. This sanguinary spirit, ignorant of pity or forgiveness, has been moderated, however, by the maxims of honour, which require in every private encounter some decent equality of age and strength, of numbers and weapons. An annual festival of two, perhaps of four months, was observed by the Arabs before the time of Mahomet; during which their swords were religiously sheathed both in foreign and domestic hostility: and this partial truce is more strongly expressive of the habits of anarchy and warfare.

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Annual
truce.

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Their so-
cial quali-
fications
and vir-
tues.

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Love of
poetry.

"But the spirit of rapine and revenge was attempered by the milder influence of trade and literature. The solitary peninsula is encompassed by the most civilized nations of the ancient world: the merchant is the friend of mankind; and the annual caravans imported the first seeds of knowledge and politeness into the cities, and even the camps of the desert. The arts of grammar, of metre, and of rhetoric, were unknown to the free-born eloquence of the Arabians; but their penetration was sharp, their fancy luxuriant, their wit strong and sententious, and their more elaborate compositions were addressed with energy and effect to the minds of their hearers. The genius and merit of a rising poet was celebrated by the applause of his own, and the kindred tribes. A solemn banquet was prepared, and a chorus of women, striking their tymbals, and displaying the pomp of their nuptials, sung in the presence of their sons and husbands the felicity of their native tribe;

that a champion had now appeared to vindicate their rights; that a herald had raised his voice to immortalise their renown. The distant or hostile tribes resorted to an annual fair which was abolished by the fanaticism of the first Moslems; a national assembly that must have contributed to refine and harmonise the barbarians. Thirty days were employed in the exchange, not only of corn and wine, but of eloquence and poetry. The prize was disputed by the generous emulation of the bards; the victorious performance was deposited in the archives of princes and emirs; and we may read in our own language the seven original poems which were inscribed in letters of gold and suspended in the temple of Mecca. The Arabian poets were the historians and moralists of the age; and if they sympathised with the prejudices, they inspired and crowned the virtues of their countrymen. The indissoluble union of generosity and valour was the darling theme of their song; and when they pointed their keenest satire against a despicable race, they affirmed, in the bitterness of reproach, that the men knew not how to give, nor the women to deny. The same hospitality which was practised by Abraham and celebrated by Homer, is still renewed in the camps of the Arabs. The ferocious Bedoweens, the terror of the desert, embrace, without inquiry or hesitation, the stranger who dares to confide in their honour and to enter their tent. His treatment is kind and respectful: he shares the wealth or the poverty of his host; and, after a needful repose, he is dismissed on his way, with thanks, with blessings, and perhaps with gifts.

"The religion of the Arabs, as well as of the Indians, consisted in the worship of the sun, the moon, and the fixed stars; a primitive and spacious mode of superstition. The bright luminaries of the sky display the visible image of a Deity: their number and distance convey to a philosophic, or even a vulgar eye, the idea of boundless space: the character of eternity is marked on these solid globes, that seem incapable of corruption or decay: the regularity of their motions may be ascribed to a principle of reason or instinct; and their real or imaginary influence encourages the vain belief that the earth and its inhabitants are the object of their peculiar care. The science of astronomy was cultivated at Babylon; but the school of the Arabs was a clear firmament and a naked plain. In their nocturnal marches, they steered by the guidance of the stars: their names, and order, and daily station, were familiar to the curiosity and devotion of the Bedoween; and he was taught by experience to divide in 28 parts the zodiac of the moon, and to bless the constellations who refreshed, with salutary rains, the thirst of the desert. The reign of the heavenly orbs could not be extended beyond the visible sphere; and some metaphysical powers were necessary to sustain the transmigration of souls and the resurrection of bodies; a camel was left to perish on the grave, that he might serve his master in another life; and the invocation of departed spirits implies that they were still endowed with consciousness and power. Each tribe, each family, each independent warrior, created and changed the rites and the object of his fantastic worship; but the nation, in every age, has bowed to the religion, as

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The Caaba
or temple
of Mecca.

well as to the language of Mecca. The genuine antiquity of the Caaba extends beyond the Christian æra: in describing the coast of the Red Sea, the Greek historian Diodorus has remarked between the Thamaudites and the Sabæans, a famous temple, whose superior sanctity was revered by *all* the Arabians: the linen or silken veil, which is annually renewed by the Turkish emperor, was first offered by a pious king of the Homerites, who reigned 700 years before the time of Mahomet. A tent or a cavern might suffice for the worship of the savages, but an edifice of stone and clay has been erected in its place; and the art and power of the monarchs of the east have been confined to the simplicity of the original model. A spacious portico incloses the quadrangle of the Caaba; a square chapel, 24 cubits long, 23 broad, and 27 high; a door and a window admit the light; the double roof is supported by three pillars of wood; a spout (now of gold) discharges the rain-water, and the well Zemzem is protected by a dome from accidental pollution. The tribe of Koreish, by fraud or force, had acquired the custody of the Caaba: the sacerdotal office devolved through four lineal descents to the grandfather of Mahomet; and the family of the Hashemites, from whence he sprung, was the most respectable and sacred in the eyes of their country. The precincts of Mecca enjoyed the rights of sanctuary; and, in the last month of each year, the city and the temple were crowded with a long train of pilgrims, who presented their vows and offerings in the house of God. The same rites which are now accomplished by the faithful Mussulman were invented and practised by the superstition of the idolaters. At an awful distance they cast away their garments: seven times, with hasty steps, they encircled the Caaba, and kissed the black stone: seven times they visited and adored the adjacent mountains; seven times they threw stones into the valley of Mina; and the pilgrimage was atchieved, as at the present hour, by a sacrifice of sheep and camels, and the burial of their hair and nails in the consecrated ground. Each tribe either found or introduced in the Caaba their domestic worship: the temple was adorned, or defiled, with 360 idols of men, eagles, lions, and antelopes; and most conspicuous was the statue of Hebal, of red agate, holding in his hand seven arrows, without heads or feathers, the instruments and symbols of profane divination. But this statue was a monument of Syrian arts: the devotion of the ruder ages was content with a pillar or a tablet; and the rocks of the desert were hewn into gods or altars, in imitation of the black stone of Mecca, which is deeply tainted with the reproach of an idolatrous origin. From Japan to Peru, the use of sacrifice has universally prevailed; and the votary has expressed his gratitude or fear by destroying or consuming, in honour of the gods, the dearest and most precious of their gifts. The life of a man is the most precious oblation to deprecate a public calamity: the altars of Phœnicia and Egypt, of Rome and Carthage, have been polluted with human gore; the cruel practice was long preserved among the Arabs; in the third century, a boy was annually sacrificed by the tribe of the Dumatians; and a royal captive was piously slaughtered by the prince of the Saracens, the ally and soldier of the emperor Justinian. The father

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and rites.

of Mahomet himself was devoted by a rash vow, and hardly ransomed for the equivalent of 100 camels. The Arabs, like the Jews and Egyptians, abstained from the taste of swine's flesh; and they circumcised their children at the age of puberty: the same customs, without the censure or the precept of the Koran, have been silently transmitted to their posterity and profelytes; and it has been sagaciously conjectured, that the artful legislator indulged the stubborn prejudices of his countrymen.

“ Arabia was free: From the adjacent kingdoms, which were shaken by the storms of conquest and tyranny, the persecuted sects fled to the happy land where they might profess what they thought, and practise what they professed; and the religions of the Sabians and Magians, of the Jews and Christians, were disseminated from the Persian gulf to the Red Sea. In a remote period of antiquity, Sabianism was diffused over Asia by the science of the Chaldeans and the arms of the Assyrians. From the observations of 2000 years, the priests and astronomers of Babylon deduced the eternal laws of nature and providence. They adored the seven gods or angels who directed the course of the seven planets, and shed their irresistible influence on the earth. The attributes of the seven planets, with the twelve signs of the zodiac, and the twenty-four constellations of the northern and southern hemisphere, were represented by images and talismans; the seven days of the week were dedicated to their respective deities; the Sabians prayed thrice each day; and the temple of the moon at Haran was the term of their pilgrimage. But the flexible genius of their faith was always ready either to teach or to learn. The altars of Babylon were overturned by the Magians; but the injuries of the Sabians were revenged by the sword of Alexander; Persia groaned above 500 years under a foreign yoke; and the purest disciples of Zoroaster escaped from the contagion of idolatry, and breathed with their adversaries the freedom of the desert. Seven hundred years before the death of Mahomet the Jews were settled in Arabia: and a far greater multitude was expelled from the holy land in the wars of Titus and Hadrian. The industrious exiles aspired to liberty and power: they erected synagogues in the cities, and castles in the wilderness; and their Gentile converts were confounded with the children of Israel, whom they resembled in the outward mark of circumcision. The Christian missionaries were still more active and successful: the Catholics asserted their universal reign; the sects whom they oppressed successively retired beyond the limits of the Roman empire; the Marcionites and Manichæans dispersed their *phantastic* opinions and apocryphal gospels; the churches of Yemen, and the princes of Hira and Gassan, were instructed in a purer creed by the Jacobite and Nestorian bishops.” Such was the state of religion in Arabia previous to the appearance of Mahomet. See n° 22. *supra*.

As the Arabs are one of the most ancient nations in the world, having inhabited the country they at present possess almost from the deluge, without intermixing with other nations, or being subjugated by any foreign power, their language must have been formed soon after, if not at, the confusion of Babel. The two principal

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stians.

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pal dialects of it were, that spoken by the Hamyarites and other genuine Arabs, and that of the Koreish, in which Mahomet wrote the Koran. The first is styled by the Oriental writers the *Arabic of Hamyar*, and the other *the pure or defecated*. As Yarab, grandfather of Hamyar, is supposed by the Oriental writers to have been the first whose tongue deviated from the Syriac to the Arabic, the Hamyaritic dialect according to them must have approached nearer to the purity of the Syriac; and consequently have been more remote from the true genius of the Arabic than that of any other tribe. The dialect of the Koreish, termed by the Koran *the perspicuous and clear Arabic*, is referred to Ishmael as its author; who, say the above mentioned writers, first spoke it; and, as Dr Pocock believes, after he had contracted an alliance with the family of Jorham by marriage, formed it of their language and the original Hebrew. As, therefore, the Hamyaritic dialect partook principally of the Syriac, so that of the Koreish was supposed to consist chiefly of the Hebrew. But, according to Jallalod'din, the politeness and elegance of the dialect of the Koreish ought rather to be attributed to their having, from the remotest antiquity, the custody of the Caaba, and dwelling in Mecca the centre of Arabia. The Arabs are full of the commendations of their language, which is very harmonious, expressive; and, as they say, so immensely copious, that no man uninspired can be a perfect master of it in its utmost extent. How much, in this last article, it is superior to the Greek and Latin tongues, in some measure appears from hence, that sometimes a bare enumeration of the Arabic names of one particular thing, and an explication of them, will make a considerable volume. Notwithstanding this, the Arabs believe the greatest part of their language to be lost; which will not seem improbable, when we consider how late the art of writing became generally practised among them. For though it was known to Job their countryman, to the Edomites, as well as the other Arabian nations bordering upon Egypt and Phœnicia, and to the Hamyarites many centuries before Mahomet, as appears from some ancient monuments said to be remaining in their character; yet the other Arabs, and those of Mecca in particular, unless such of them as were either Jews or Christians, were to the time of Moramer perfectly ignorant of it. It was the ancient Arabic language preceding the reign of Justinian, which so nearly resembled the Ethiopic; for since that time, and especially since the age of Mahomet, all the Arabic dialects have been not a little corrupted. This is now the learned language of the Mahometans, who study it as the European Christians do the Hebrew, Greek, and Latin.

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The character used by them, the most ancient of any peculiar to the Arabs, wherein the letters were not distinctly separate, went by the appellation of *Al Mofnad*, from the mutual dependency of its letters or parts upon one another. This was neither publicly taught, nor suffered to be used, without permission first obtained. Could we depend upon what Al Firauzabadius relates from Ebn Hashem, this character must have been of a very high antiquity; since an inscription in it, according to the last author, was found in Yaman as old as the time of Joseph. Be that as it will, Moramet Ebn Morra of Anbar, a city of Irak, who lived not

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many years before Mahomet, was the inventor of the present Arabic character, which Bashar the Kendian, who married the sister of Abu Sofian, is said to have learned from the house of Anbar, and to have introduced at Mecca but a little time before the institution of Mahometism. Moramer's alphabet the Oriental authors agree to have been very different from the ancient one of the Hamyarites, since they distinguish the Hamyaritic and Arabic pens. In Mahomet's time, the Morameric alphabet had made so small a progress, that no one in Yaman could either write or read it; nay, Mahomet himself was incapable of doing either; for which reason he was called the *illiterate prophet*. The letters of this alphabet were very rude; being either the same with, or very much like, the Cufic; which character is still found in inscriptions and the titles of ancient books; nay, for many years it was the only one used by the Arabs, the Koran itself being at first written therein. In order to perpetuate the memory of Moramer's invention, some authors call the Arabic letters *al Moramer*, i. e. *the progeny of Moramer*. The most remarkable specimens of the *Cufic* character (so denominated from Cufa, a city of Irak, where some of the first copies of the Koran were written) are the following: Part of that book in it on vellum, brought from Egypt by Mr Greaves; some other fragments of the same book in it published by Sir John Chardin; certain passages of a MS. in the Bodleian library; the legends on several Saracenic coins dug up not many years ago on the coast of the Baltic, not far from Dantzick; and, according to Mr Professor Hunt, those noble remains of it that are, or were lately, to be seen in Mr Joseph Ames's valuable collection of antique curiosities. As to the true origin of the ancient and modern Arabic alphabets, we must own ourselves pretty much in the dark. See ALPHABET.

The Arabian learning may be divided into two periods, viz. *Ante-Mahometan* and *Mahometan*. 200
Learning,
&c.

The Arab learning, in this first period, consisted, according to Abulpharagius, in the knowledge of their language, the propriety of discourse, the composition of verse, and the science of the stars: but their chief attention seems to have been directed to oratory and poetry.

The second period is more distinguished, at least from the time of Al-Mamon, the seventh caliph of the family of the Abassides, who flourished about the year 820, and has the honour of being the founder of the modern Arabian learning. He sent for all the best books out of Chaldea, Greece, Egypt, and Persia, relating to physic, astronomy, cosmography, music, chronology, &c. and pensioned a number of learned men, skilled in the several languages and sciences, to translate them into Arabic. By this means, divers of the Greek authors, lost in their own country and language, have been preserved in Arabic. From that time Arabia became the chief seat of learning; and we find mention by Abulpharagius, Pococke, D'Herbelot, and Hottinger, of learned men, and books without number.

The revival of learning in the tenth century, by Gerbert, known after his elevation to the pontificate by the title of Silvester II. and afterwards among the Europeans in general, may be ascribed to the instructions and writings of the Arabian doctors and philosophers,

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and

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and to the schools which they founded in several parts of Spain and Italy. And in the 12th century, the inquisitive of different countries frequented the schools of the Saracens in Spain, and disseminated the knowledge which they obtained there after their return. At this time, many of the learned productions of the Arabians were translated into Latin, which facilitated the general progress of science.

The philosophy of the Arabians, before Mahomet, was Sabian, and included the system and ceremonies of that sect of idolaters. This it was that Mahomet set himself to decry; and he is even said by some to have carried his opposition so far, as to prohibit, if not punish, all study of philosophy. But his followers, by degrees, got over this restraint; the love of learning increased; till, under the memorable caliph of Al-Mamon, Aristotle's philosophy was introduced and established among them; and from them propagated, with their conquests, through Egypt, Africa, Spain, and other parts. As they chose Aristotle for their master, they chiefly applied themselves to that part of philosophy called *logic*, and thus became proficient in the knowledge of words rather than things. Whence they have been sometimes denominated *Masters of the wisdom of words*; sometimes the *Talking sect*. Their philosophy was involved in quaint arbitrary terms and notions, and their demonstrations drawn from thence as from certain principles, &c. *Walch Hist. Log. lib. ii. sec. 2. § 1.*

Their physic succeeded the Grecian; and their physicians handed down the art to us, having made considerable improvements, chiefly in the pharmaceutical and chemical parts.

It is certain we owe to them most of our spices and aromatics, as nutmegs, cloves, mace, and other matters of the produce of India. We may add, that most of the gentler purgatives were unknown to the Greeks, and first introduced by the Arabs, as manna, senna, rhubarb, tamarinds, cassia, &c. They likewise brought sugar into use in physic, where, before, only honey was used. They also found the art of preparing waters and oils, of divers simples, by distillation and sublimation. The first notice of the small-pox and the measles is likewise owing to them. Lastly, the restoration of physic in Europe took its rise from their writings. M. le Clerc has given a sketch, and Dr Freind an ample history, of the Arabian physic. We have also a *notitia* of all the Arabian physicians by Fabricius.

Their poetry may be divided into two ages. The ancient, according to Vossius, was no other than rhyming; was a stranger to all measure and rule; the verses loose and irregular, confined to no feet, number of syllables, or any thing else, so that they rhimed at the end; oftentimes all the verses in the poem ended with the same rhyme. It is in such verse that the Alcoran is said to be written.

The modern Arabian poetry takes its date from the caliphate of Al Raschid, who lived toward the close of the eighth century. Under him poetry became an art, and laws of prosody were laid down. Their comparisons, in which they abound, are taken, with little choice, from tents, camels, hunting, and the ancient manners of the Arabs.

201
Mechanical arts. That some of the Arabs had a good degree of know-

ledge in several mechanical arts, appears from Strabo, who informs us, that the people of Tamna and the adjacent provinces had magnificent temples, and elegant houses, built in the Egyptian taste. The same author likewise relates, that in Arabia Felix, besides the husbandmen, there were many artificers; and, amongst others, those which made palm-wine, which, he intimates, were much used by the Arabs. As for the exercise of arms and horsemanship, they looked upon this as one of their principal accomplishments, being obliged to practise and encourage it by reason of the independency of their tribes, whose frequent jarring made wars almost continual amongst them, which for the most part ended in field-battles. Hence it became an usual saying amongst them, that God had bestowed four peculiar things on the Arabs, viz. *turbans instead of diadems, tents instead of walls and houses, swords instead of intrenchments, and poems instead of written laws*. The principal arms used by the ancient Arabs were bows and arrows, darts or javelins, and broad swords or scymitars. The bows and arrows were the most ancient of these; being used by Ishmael himself, according to Scripture. It is probable also, that some of them were acquainted with every branch of the military art cultivated by their neighbours the Egyptians, Syrians, and Phœnicians.

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Commerce. Before the Portuguese interrupted the navigation of the Red Sea, the Arabs were the factors of all the trade that passed thro' that channel. Aden, which is situated at the most southern extremity of Arabia upon the Indian ocean, was the mart in those parts. The situation of its harbour, which opened an easy communication with Egypt, Ethiopia, India, and Persia, had rendered it, for many ages, one of the most flourishing factories in Asia. Fifteen years after it had repulsed the great Albuquerque, who attempted to demolish it in 1513, it submitted to the Turks, who did not long remain masters of it. The king of Yemen, who possessed the only district in Arabia that merits the title of *Happy*, drove them from thence, and removed the trade to Mocha, a place in his dominions which till then was only a village.

This trade was at first inconsiderable; consisting principally in myrrh, incense, aloes, balm of Mecca, some aromatics and medicinal drugs. These articles, the exportation of which is continually retarded by exorbitant imposts, and does not exceed at present 30,625l. were at that time more in repute than they have been since: but must have been always of little consequence. Soon after a great change ensued from the introduction of coffee.

Though this article is generally used in the Arabian entertainments, none but the rich citizens have the pleasure of tasting the berry itself. The generality are obliged to content themselves with the shell and the husk of this valuable production. These remains, so much despised, make a liquor of a pretty clear colour, which has a taste of coffee without its bitterness and strength. These articles may be had at a low price at Betelsagui, which is the general market for them. Here likewise is sold all the coffee which comes out of the country by land. The rest is carried to Mocha, which is 35 leagues distant, or to the nearer ports of Lohia or Hodeida, from whence it is transported in small vessels to Jodda. The Egyptians fetch it from the

Arabia. the last mentioned place, and all other nations from the former.

The quantity of coffee exported may be estimated at twelve millions five hundred and fifty thousand weight. The European companies take off a million and a half; the Persians three millions and a half; the fleet from Suez six millions and a half; Indostan, the Maldives, and the Arabian colonies on the coast of Africa, fifty thousand; and the caravans a million.

As the coffee which is brought up by the caravans and the Europeans is the best that can be procured, it costs about 8½d. a pound. The Persians, who content themselves with that of an inferior quality, pay no more than about 6½d. a pound. The Egyptians purchase it at the rate of about 8d; their cargoes being composed partly of good and partly of bad coffee. If we estimate coffee at about 7½d. a pound, which is the mean price, the profits accruing to Arabia from its annual exportation will amount to 384,343 l. 15 s. This money does not go into their coffers; but it enables them to purchase the commodities brought from the foreign markets to their ports of Jodda and Mocha.

Mocha receives from Abyssinia, sheep, elephants teeth, musk, and slaves. It is supplied from the eastern coast of Africa with gold, slaves, amber, and ivory; from the Persian gulf, with dates, tobacco, and corn; from Surat, with a vast quantity of coarse, and a few fine, linens; from Bombay and Pondicherry, with iron, lead, and copper, which are carried thither from Europe; from Malabar, with rice, ginger, pepper, Indian saffron, with coire, cardamom, and also with planks; from the Maldives, with gum, benzoin, aloes wood, and pepper, which these islands take in exchange; from Coromandel, with 400 or 500 bales of cottons, chiefly blue. The greatest part of these commodities, which may fetch 262,500 l. are consumed in the interior part of the country. The rest, particularly the cottons, are disposed of in Abyssinia, Socotora, and the eastern coast of Africa.

None of the branches of business which are managed at Mocha, as well as throughout all the country of Yaman, or even at Sanaa the capital, are in the hands of the natives. The extortions with which they are perpetually threatened by the government deter them from interfering in them. All the warehouses are occupied by the Banians of Surat or Guzaret, who make a point of returning to their own country as soon as they have made their fortunes. They then resign their settlements to merchants of their own nation, who retire in their turn, and are succeeded by others.

The European companies, who enjoy the exclusive privilege of trading beyond the Cape of Good Hope, formerly maintained agents at Mocha. Notwithstanding it was stipulated by a solemn capitulation, that the imposts demanded should be rated at two and a quarter *per cent.* they were subject to frequent extortions: the governor of the place insisting on their making him presents which enabled him to purchase the favour of the courtiers, or even of the prince himself. However, the profits they obtained by the sale of European goods, particularly clothes, made them submit to these repeated humiliations. When these several articles were furnished by Grand Cairo, it was then impossible to withstand the competition, and the fixed settlements were therefore given up.

The trade was carried on by ships that sailed from Europe with iron, lead, copper, and silver, sufficient to pay for the coffee they intended to buy. The supercargoes, who had the care of these transactions, settled the accounts every time they returned. These voyages, which at first were pretty numerous and advantageous, have been successively laid aside. The plantations of coffee, made by the European nations in their colonies, have equally lessened the consumption and the price of that which comes from Arabia. In process of time, these voyages did not yield a sufficient profit to answer the high charges of undertaking them on purpose. The companies of England and France then resolved, one of them to send ships from Bombay, and the other from Pondicherry, to Mocha, with the merchandise of Europe and India. They even frequently had recourse to a method that was less expensive. The English and French visit the Red sea every year. Tho' they dispose of their merchandise there to good advantage, they can never take in cargoes from thence for their return. They carry, for a moderate freight, the coffee belonging to the companies who lade the vessels with it, which they dispatch from Malabar and Coromandel to Europe. The Dutch company, who prohibit their servants from fitting out ships, and who send no vessels themselves to the gulph of Arabia, are deprived of the share they might take in this branch of commerce. They have also given up a much more lucrative branch, that of Jodda.

Jodda is a port situated near the middle of the gulph of Arabia, 20 leagues from Mecca. The government there is of a mixed kind: the grand Signior and the Xeriff of Mecca share the authority and the revenue of the customs between them. These imposts are levied upon the Europeans at the rate of 8 *per cent.* and upon other nations at 13. They are always paid in merchandise, which the managers oblige the merchants of the country to buy at a very dear rate. The Turks, who have been driven from Aden, Mocha, and every part of the Yaman, would long ago have been expelled from Jodda, if there had not been room to apprehend that they might revenge themselves in such a manner as to put an end to their pilgrimages and commerce.

The coins, which are current at Mocha, the principal port of the Red sea, are dollars of all kinds; but they abate five *per cent.* on the pillar dollars, because they are reckoned not to be the purest silver, and the dollar weight with them is 17 drams 14 grains. All their coins are taken by weight, and valued according to their pureness. The gold coins current here are ducats of Venice, Germany, Turkey, Egypt, &c. The comasses are a small coin, which are taken at such a price as the government sets on them; and they keep their accounts in an imaginary coin, called *cabeers*, of which 80 go to a dollar. For an account of the ancient coins called *dinars* and *dirhems*, see these two articles.

Gum ARABIC. See GUM.

ARABICI, a sect who sprung up in Arabia, about the year 207, whose distinguishing tenet was, that the soul died with the body, and also rose again with it.

Eusebius, lib. vi. c. 38. relates, that a council was called to stop the progress of this rising sect; and that Origen assisted at it; and convinced them so thoroughly of their error that they abjured it.

Arabis
||
Aracan.

ARABIS, BASTARD TOWER-MUSTARD: A genus of the filiquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order *Siliquose*. The generic mark consists in 4 nectiferous glands which lie on the inside of each leaf of the calyx. There are 8 species; but none of them remarkable for their beauty or other properties. Only one of these, the thaliana or mouse-eer, is a native of Britain. It is a low plant, seldom rising more than four or five inches high, branching on every side, having small white flowers growing alternately, which have each four petals in form of a cross, that are succeeded by long slender pods filled with small round seeds. It grows naturally on sandy ground or old walls. Sheep are not fond of it, and swine refuse it.

ARABISM, ARABISMUS, an idiom or manner of speaking peculiar to the Arabs or the Arabic language.

ARABIST, a person curious of, and skilled in, the learning and languages of the Arabians: such were Erpenius and Golius. The surgeons of the 13th century are called *Arabists* by Severinus.

ARABLE LANDS, those which are fit for tillage, or which have been formerly tilled.

ARACAN, the capital of a small kingdom to the north-east of the bay of Bengal, situated in E. Long. 93. O. N. Lat. 20. 30. It has the conveniency of a spacious river, and a harbour large enough to hold all the ships in Europe. It is said by Schouten to be as large as Amsterdam; but the houses are slight, being made with palm-trees and bamboo-canes, and covered with leaves of trees. They are seldom above six feet high, but have many windows or air-holes. But the people of the highest rank are much better accommodated. They have no kitchens, chimneys, or cellars, which oblige the women to dress the victuals out of doors. Some of the streets are on the ridges of rocks, wherein are a great many shops. Their orchards and gardens contain all the fruit common to the Indies, and their trees are green all the year. Their common drink is toddy; which is the sap of the cocoa-tree, and when new, will intoxicate like wine, but soon grows sour. Elephants and buffaloes are very numerous here, and are made use of instead of horses. They have plenty of provisions, and but little trade: for when Mr Channoch was here in 1686, with six large ships, there was nothing to be had in the way of commerce; and yet the country produces lead, tin, flick-lac, and elephants teeth. The Mogul's subjects come here to purchase these commodities; and sometimes meet with diamonds, rubies, and other precious stones. They were formerly governed by a king of their own, called the king of the *White Elephant*; but this country has been conquered by the king of Pegu. They pay little or no regard to the chastity of their women, and the common sailors take great liberties among them. Their religion is Paganism; and the idols, temples, and priests are very numerous. The dress of the better sort is very slight, for it consists chiefly of a piece of white cotton over their arms, breast, and belly, with an apron before. The complexion of the women is tolerable; they wear thin flowered gauze over their breast and shoulders, and a piece of cotton, which they roll three or four times round their waist, and let it hang as low as their feet. They curl their hair, and put glass rings

in their ears, and stretch them of a monstrous length. On their arms and legs they have hoops of copper, ivory, silver, &c. The country produces great quantities of rice, and the water is good. Their flocks of sheep and herds of cattle are also numerous near Aracan; but what they say of the towns and villages, with which the country is pretended to be overspread, may be doubted. Captain Hamilton affirms, that there are but few places inhabited, on account of the great number of wild elephants and buffaloes, which would destroy the fruits of the ground; and that the tigers would destroy the tame animals. There are some islands near the sea, inhabited by a few miserable fishermen, who can just keep themselves from starving, tho' they are out of the reach of oppression. The rich burn the dead bodies; but the poor, who are not able to buy wood, throw them into the river.

ARACHIS, in botany: A genus of the diadelphia order, belonging to the decandria class of plants; and, in the natural method, ranking under the 32d order, *Papilionacea*. There is only one species, the hypogæa, an annual plant, and a native of Brasil and Peru. The stalks are long, trail upon the ground, and are furnished with winged leaves, composed of four hairy lobes each. The flowers are produced singly on long peduncles; they are yellow, of the pea kind, and each contains ten awl-shaped stamina, nine of which are tied together, and the upper one stands off. In the centre is an awl-shaped stylus, crowned with a simple stigma. The germen is oblong, and becomes an oval oblong pod, containing two or three oblong blunt seeds. — This plant is cultivated in all the American settlements for the seeds, which make a considerable part of the food of the slaves. The manner of perfecting them is very singular: for as the flowers fall off, the young pods are forced into the ground by a natural motion of the stalks, and there they are entirely buried, and not to be discovered without digging for them; whence they have taken the name of *ground-nuts*.

ARACHNE, in fabulous history, a young maid of Lydia, said to have been the inventress of spinning. She is fabled to have been so skilful in this art, as to challenge Minerva at it; who tore her work, and struck her; which disgrace driving her to despair, she hanged herself. Minerva, from compassion, brought her to life, and transformed her into a spider, which still employs itself in spinning.

ARACHNOIDES, in anatomy, an appellation given to several membranes; as the tunic of the crystalline humour of the eye, the external lamina of the pia mater, and one of the coverings of the spinal marrow.

ARACK, ARRACK, OR RACK, a spirituous liquor imported from the East Indies, used by way of dram and in punch.

The word *arack*, according to Mr Lockyer, is an Indian name for strong waters of all kinds: for they call our spirits and brandy *English arack*. But what we understand by the name *arack*, he affirms is really no other than a spirit procured by distillation from a vegetable juice called *toddy*, which flows by incision out of the cocoa-nut tree, like the birch juice procured among us. The toddy is a pleasant drink by itself, when new, and purges those who are not used to it; and, when stale, it is heady, and makes good vinegar.

Arachis
||
Arack.

Arack. The English at Madras use it as leaven to raise their bread with.

Others are of opinion, that the arack or arrack, is a vinous spirit obtained by distillation, in the East Indies, from rice or sugar, fermented with the juice of cocoa-nuts.

The Goa arack is said to be made from the toddy, the Batavia arack from rice and sugar; and there is likewise a kind of shrub from which arack is made.

Goa and Batavia are the chief places for arack.—At Goa there are divers kinds; single, double, and treble distilled. The double distilled, which is that commonly sent abroad, is but a weak spirit in comparison with Batavia arack; yet, on account of its peculiar and agreeable flavour, is preferred to all the other aracks of India. This flavour is attributed to the earthen vessels which they use at Goa to draw the spirit; whereas at Batavia they use copper stills.

The Parier arack made at Madras, and the Columbo and Quilone arack at other places, being fiery hot spirits, are little valued by the Europeans, and therefore rarely imported; though highly prized among the natives. In the best Goa arack, the spirits of the cocoa juice do not make above a sixth or eighth part.

The manner of making the Goa arack is this: The juice of the trees is not procured in the way of tapping, as we do; but the operator provides himself with a parcel of earthen pots, with bellies and necks like our ordinary bird-bottles: he makes fast a number of these to his girdle, and any way else that he commodiously can about him. Thus equipped, he climbs up the trunk of a cocoa tree; and when he comes to the boughs, he takes out his knife, and cutting off one of the small knots or buttons, he applies the mouth of the bottle to the wound, fastening it to the bough with a bandage; in the same manner he cuts off other buttons, and fastens on his pots, till the whole number is used: this is done in the evening, and descending from the tree, he leaves them till the next morning; when he takes off the bottles, which are mostly filled, and empties the juice into the proper receptacle. This is repeated every night, till a sufficient quantity is produced; and the whole being then put together, is left to ferment, which it soon does. When the fermentation is over, and the liquor or wash is become a little tart, it is put into the still, and a fire being made, the still is suffered to work as long as that which comes over has any considerable taste of spirit.

The liquor thus procured is the low wine of arack; and this is so poor a liquor, that it will soon corrupt and spoil, if not distilled again, to separate some of its phlegm; they therefore immediately after pour back this low wine into the still, and rectify it to that very weak kind of proof-spirit, in which state we find it. The arack we meet with, notwithstanding its being of a proof-test, according to the way of judging by the crown of bubbles, holds but a sixth, and sometimes but an eighth part of alcohol, or pure spirit; whereas our other spirits, when they show that proof, are generally esteemed to hold one half pure spirit. *Shaw's Essay on Distilling.*

There is a paper of observations on arack, in the *Mélanges d'Histoire Natur.* tome v. p. 302. By fermenting, distilling, and rectifying the juice of the American maple, which has much the same taste as that of the

cocoa, the author says, he made arack not in the least inferior to any that comes from the East Indies; and he thinks the juice of the sycamore and of the birch trees would equally answer the end.

Besides the common sorts of Goa and Batavia arack, there are two others less generally known; these are the bitter arack and the black arack.

By stat. 11th Geo. I. c. 30. arack on board a ship within the limits of any port of Great Britain, may be searched for and seized, together with the package; or if found unshipping or unshipped, before entry, may be seized by the officers of excise, in like manner as by the officers of the customs.—Upon an excise officer's suspicion of the concealment of arack, and oath made of the grounds of such suspicion before the commissioners or a justice of peace, they may empower him to enter such suspected places, and seize the liquors, with the casks, &c. If the officers are obstructed, the penalty is 100 l.

Arack is not to be sold but in warehouses, entered as directed in the 6th of Geo. I. c. 21. upon forfeiture, and the casks, &c. If permits are not returned which are granted for the removal of arack, or if the goods are not sent away within the time limited, the penalty is treble the value. If the permits are not returned, and the decrease is not found to be sufficient, the like quantity is forfeited. Permits are not to be taken out but by direction in writing of the proprietor of the stock, or his known servant, upon forfeiture of 50 l. or three months imprisonment.

By stat. 9th Geo. II. c. 35. if arack is offered to sale without a permit, or by any hawker, pedlar, &c. with a permit, the person to whom it is offered may seize and carry it to the next warehouse belonging to the customs or excise, and bring the person offering the same before any justice of the peace, to be committed to prison, and prosecuted for the penalties incurred by such offence. The person seizing such goods may prosecute in his own name; and on recovery is intitled to one-third part of the gross produce of the sale; and the commissioners are, if desired, upon a certificate from the justice of the offender's being committed to prison, to advance to the seizer 15 s. per gallon for the arack so seized.

Arack (except for the use of seamen, two gallons each) found in any ship or vessel arrived from foreign parts, at anchor, or hovering within the limits of any port, or within two leagues of the shore; and not proceeding on her voyage (unless in case of unavoidable necessity and distress of weather, notice whereof must be given to the collector or chief officer of the port upon the ship's arrival), is forfeited, with the boxes, casks, or other package, or the value thereof.

ARACK is also the name of a spirituous liquor made by the Tartars of Tungusia, of mare's milk, left to sour, and afterwards distilled twice or thrice between two earthen pots closely stopped, whence the liquor runs through a small wooden pipe. It is more intoxicating than brandy.

ARAD (anc. geog.), a city lying to the south of Judah and the land of Canaan, in Arabia Petraea. The Israelites having advanced towards the land of Canaan (Numb. xxi. 1.), the king of Arad opposed their passage, defeated them, and took a great booty from them; but they destroyed his country as soon as they became

Arack,
Arad.

Aradus
||
Aræome-
ter.

became masters of the land of Canaan (Numb. xxxiii.) Arad was rebuilt, and Eusebius places it in the neighbourhood of Khades, at the distance of 20 miles from Hebron. The Israelites, in their passage through the wilderness, having departed from Sepher, came to Arad, and from thence to Makkelath.

ARADUS (anc. geog.), an island between the borders of Phœnicia and Seleucis, at the distance of 20 stadia from a dangerous coast: all of it a rock surrounded by the sea, in compass seven stadia; and forming a very powerful city and republic. It is now called *Ronad*; but not a single wall is remaining of all that multitude of houses which, according to Strabo, were built with more stories than even those of Rome. The liberty enjoyed by the inhabitants had rendered it very populous; and it subsisted by naval commerce, manufactures, and arts. At present the island is deserted; nor has tradition even retained the memory of a spring of fresh water in its environs, which the people of Aradus discovered at the bottom of the sea, and from which they drew water in time of war by means of a leaden bell and a leathern pipe fitted to its bottom.

ARÆ PHILÆNON, or PHILÆNORUM (Strabo); to the south of the Syrtis Major; but in Peutinger; more westerly, to the south almost of the Syrtis Minor. In Strabo's time, the altars were not extant, but a village of the same name stood on the spot. On a dispute about limits, between the Cyreneans and Carthaginians, it was agreed that two of each people should set out on the same day, and that where they should happen to meet, there the limits of both should be fixed. The Philæni, two brothers, Carthaginians, undertook it for Carthage: these, after having advanced a great many miles into the territory of the Cyreneans, were met by their antagonists; who, enraged at their being beforehand with them so far, gave them the option of either returning back, or of being buried alive on the spot. Like zealous patriots, they chose the latter; and there the Carthaginians raised two altars in honour of the Philæni. (Sallust, Valerius Maximus.)

ARÆOMETER, an instrument wherewith to measure the density or gravity of fluids.

The aræometer, or water-poise, is usually made of glass; consisting of a round hollow ball, which terminates in a long slender neck hermetically sealed at top: there being first as much running mercury put into it as will serve to balance or keep it swimming in an erect position.

The stem is divided into degrees (as represented Plate XXXII. fig. 23.); and by the depth of its descent into any liquor, the lightness of that liquor is concluded: for that fluid in which it sinks least must be heaviest: and that in which it sinks lowest, lightest.

M. Homburg has invented a new aræometer, described in Phil. Transact. N° 262. thus: *A* is a glass bottle or matrafs, with so slender a neck that a drop of water takes up in it about five or six lines, or half of an inch. Near that neck is a small capillary tube *D*, about six inches long, and parallel to the neck.—To fill the vessel, the liquor is poured in at the mouth *B* (which is widened to receive a funnel), till it run out at *D*, that is, till it rise in the neck to the mark *C*, by which means you have always the same bulk or quantity of liquor; and consequently, by means of the

balance, can easily tell, when different liquors fill it, which weigh most, or is intensely heavy.

Some regard, however, is to be had in these trials to the season of the year and degree of heat and cold in the weather; because some liquors rarefy with heat and condense with cold more than others, and accordingly take up more or less room.

By means of this instrument, the ingenious author has made a table to show the different weights of the same bulk of the most considerable chemical liquors both in summer and winter, as follows:

	Weighed in summer.		In winter.	
	oz.	dr. gr.	oz.	dr. gr.
The aræometer full of				
Quicksilver,	11	00 06	11	00 32
Oil of tartar,	01	03 08	01	03 31
Spirit of urine,	01	00 32	01	00 43
Oil of vitriol,	01	03 58	01	04 03
Spirit of nitre,	01	01 40	01	01 70
Spirit of salt,	01	00 39	01	00 47
Aquafortis,	01	01 38	01	01 55
Vinegar,	00	07 55	00	07 60
Spirit of wine,	00	06 47	00	06 61
River water,	00	07 53	00	07 57
Distilled water,	00	07 50	00	07 54

The instrument itself weighed, when empty, one dram twenty-eight grains. See HYDROMETER.

ARÆOPAGUS. See AREOPAGUS.

ARÆOSTYLE, in architecture, a term used by Vitruvius, to signify the greatest interval which can be made between columns.

ARÆOTICS, in medicine, remedies which rarefy the humours, and render them easy to be carried off by the pores of the skin.

ARAF, among the Mahometans. See ALARAF.

ARAFAH, the ninth day of the last month of the Arabic year, named *Dhoulbegiat*; on which the pilgrims of Mecca perform their devotions on a neighbouring mountain called *Arafat*. The Mahometans have a very great veneration for this mountain, because they believe that Adam and Eve, after they were banished out of Paradise, having been separated from each other during 120 years, met afterwards on this mountain.

ARAFAT, or GIBEL EL ORPHAT, *the mountain of knowledge*, a mountain in Arabia, near Mecca. The Mahometans say this was the place where Adam first met with and knew his wife Eve after their expulsion from Paradise. This mountain not being large enough to contain all the devotees that come annually in pilgrimage to Mecca, stones are set up all round it to show how far it reaches. The pilgrims are clad in robes of humility and mortification, with their heads uncovered. They seem to be very much affected; for the tears flow down their cheeks, and they sob and sigh most bitterly, begging earnestly for remission of sins, and promising to lead a new life. They continue here about four or five hours, and at half an hour after sunset they all decamp to perform a religious duty called *Asbam nomas*. After this, they all receive the honourable title of *hadgees*, which is conferred upon them by the imam or priest. This being pronounced, the trumpet sounds, and they all return to Mecca.

ARAGON. See ARRAGON.

ARAL, a great lake in the kingdom of Khowarazm,

Aræome-
ter
||
Aral.

Arahum,
Aralia.

razm, lying a little to the eastward of the Caspian sea. Its length from north to south is said to be near 150 miles, and its breadth from east to west about 70. The shore on the west side is high and rocky, and destitute of good water: yet there are abundance of wild horses, asses, antelopes, and wolves; as also a fierce creature called a *jolbart*, which the Tartars say is of such a prodigious strength as to carry off a horse. It is surprising that this lake should be quite unknown to geographers till within these few years. Several great rivers, which were supposed to run into the Caspian sea, are now known to fall into this lake, particularly the Sihun or Sirr, and the Gihun or Amo, so often mentioned by the Oriental historians. This lake, like the Caspian sea, has no visible outlet. Its water is also very salt; and for that reason is conveyed by the neighbouring inhabitants by small narrow canals into sandy pits, where the heat of the sun, by exhaling the water, leaves them a sufficient quantity of salt. The same kinds of fish are found in Aral that are found in the Caspian sea. The former is also called the *Lake of Eagles*.

ARAHUM, or HARAHUM, in ancient writers, denotes a place consecrated or set apart for holy purposes. Hence the phrase in *arabo* *jurare*, or *conjurare*, "to make oath in the church;" because, by the Riparian laws, all oaths were to be taken in the church on the relics of the saints.

ARALIA, the ANGELICA TREE: A genus of the pentagynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 46th order, *Hederaceæ*. The essential characters are: The involucre is an umbella; the calyx is quinque-dentated, and above the fruit; the corolla consists of five petals; and the berry has five seeds.

Species. There are five species of Aralia, all natives of the Indies. The principal are, 1. The nudicaulis, having a naked stalk. This grows three or four feet high; the leaves have two large trifoliate lobes, which are sawed on their edges. The flower-stalks arise between these, immediately from the root, and are terminated by round umbels of small four-leaved flowers of a whitish colour. The roots of this species were brought over from North America, and sold here for sarsaparilla, and it is still used as such by the inhabitants of Canada; though it is very different from the true sort. 2. The spinosa, with a prickly stem, is a very ornamental shrub, and a native of Virginia. The height to which this tree will grow, if the soil and situation wholly agree with it, is about twelve feet; and the stem, which is of a dark brown colour, is defended by sharp spines, which fall off; even the leaves, which are branching, and composed of many wings, and are of a pleasant green colour, have these defenders, which are both crooked and strong, and stand as guards to them till the leaves fall off in the autumn. The flowers are produced in large umbels from the ends of the branches: They are of a greenish yellow colour; and their general characters indicate their structure. They make their appearance the end of July or beginning of August; but are not succeeded by ripe seeds in our gardens.

Propagation and culture of the spinosa. This tree will what gardeners call *spawn*; i. e. after digging among the roots, young plants will arise, the broken roots sending forth fresh stems; nay, if the roots are

planted in a warm border, and shaded in hot weather, they will grow; but if they are planted in pots, and assisted by a moderate warmth of dung, or tanner's bark, they will be pretty sure of success; so that the propagation of this tree is very easy. But the general method of propagating it, and by which the best plants may be had, is from seeds, which must be procured from America, for they do not ripen in Britain; and, after having obtained them, they must be managed in the following manner: The time that we generally receive them is in the spring; so that against their coming we must be furnished with a sufficient number of large pots. These, when the seeds are come, must be filled with fine mould, which, if taken from a rich border, will do very well. The seeds must be sown in these pots as soon as possible after their arrival, hardly half an inch deep, and then the pots should be plunged in a warm place their whole depth in the soil. Care must be taken to break the mould in the pots, and water them as often as it has a tendency to crust over; and if they are shaded in hot weather, the plants will frequently come up the first summer. But as this does not often happen, if the young plants do not appear by midsummer, the pots should be taken and plunged in a shady place; nay, if they should, there will be still more occasion for this being done; for they will flourish after that better in the shade; and the design of plunging them in a warm place at first was only with a view of setting the powers of vegetation at work, that, having natural heat, artificial shade also may be given them, and water likewise, the three grand necessities for the purpose. The pots, whether the plants are come up in them or not, should be removed into shelter in October, either into a greenhouse, some room, or under a hot-bed frame; and in the spring when all danger of frost is over, they should be plunged into the natural ground their own depth in a shady place. Those that were already come up will have shot strong by the autumn following; and if none of them have appeared, they will come up this spring; and whether they are young seedlings, or small plants of a former summer's growth, they must be constantly kept clean of weeds, and duly watered in the time of drought; and this care must be observed until the autumn. In October they must be again removed into shelter, either into a greenhouse, &c. as before, or fixed in a warm place, and hooped, that they may be covered with mats in frosty weather. In the latter end of March following, they should be planted in the nursery way, to gain strength before they are finally planted out. The ground for this purpose, besides the natural shelter, should have a reed-hedge, or something of the like nature, the more effectually to prevent the piercing winds from destroying the young plants. In this snug place the plants may be set in rows: in each of which rows furze-bushes should be stuck the whole length; and all these together will ensure their safety. But here one caution is to be observed; not to stick the furze so thick, but that the plants may enjoy the free air in mild weather, and not to take them away too early in the spring, lest, being kept warm the whole winter, and being deprived of their protection, a cutting frost should happen, as it sometimes does even in April, and destroy them. Weeding and watering in dry weather must be their summer's care. They may be stuck again with furze-bushes in the winter; though it will not be necessary

Aralia.

Aram

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Aranea.

necessary to do it in so close a manner; and with this care, still diminishing in proportion the number of furze-bushes, they may continue for three or four years, when they may be planted out into the warmest parts of the plantation. With this management these plants will be inured to bear our winters in well-sheltered places.

The spines which grow on the branches and the leaves admonish us, for our own safety, not to plant this tree too near the sides of frequented walks; and the consideration of the nature of the tree, which is rather tender at the best, directs us (if we have a mind to retain the sort) to plant it in a warm and well-sheltered situation; where the piercing frosts, come from what point they will, will lose their edge: for without this, they will be too tender to stand the test of a severe winter; though it has often happened, that after the main stem of the plant has been destroyed, it has shot out again from the root, and the plant by that means been both increased and preserved.

ARAM, or *Aramea Regio* (anc. geog.), the Hebrew name of Syria, so called from Aram the son of Shem, (Moses, Josephus).

ARAM Beth-Rehob, (anc. geog.) was that part of Syria lying to the north of Palestine; because Rehob was its boundary towards that quarter, (Moses); allotted to the tribe of Asher, (Judges); where it joins Sidon, (Joshua).

ARAM-Damiesek, or Syria Damascena, (anc. geog.) a principal part of Syria, and more powerful than the rest (2 Sam.), taking its name from Damascus, the principal city.

ARAM-Maacha, (anc. geog.) a district of Syria, at the foot of mount Hermon, (2 Samuel, 1 Chronicles); on the borders of the half tribe of Manasseh, on the other side the Jordan, called the coast of *Maachathi*, (Moses, Joshua).

ARAM-Naharaim, (anc. geog.) i. e. Aram, or Syria of the Rivers, or Mesopotamia, situated between the Euphrates and Tygris; which is the reason of the name.

ARAM-Soba, or Zoba, (anc. geog.) which David conquered, was a country near the Euphrates, where afterwards Palmyra stood: the Euphrates bounded it on the east, as the land of Canaan and Syria Damascena did on the west, (2 Samuel).

ARAMONT, a town of Languedoc in France seated on the river Rhone. E. Long. 4. 52. N. Lat. 43. 54.

ARANEAE, the SPIDER; a genus of insects belong-

ing to the order of aptera, or insects without wings. All the species of spiders have eight legs, with three joints in each, and terminating in three crooked claws; eight eyes, two before, two behind, and the rest on the sides of the head. In the fore-part of the head, at the mouth, there is a pair of sharp crooked claws or forceps: these stand horizontally; and, when not exerted for use, are concealed in two cases contrived for their reception, in which they fold like a clasp-knife, and there lie between two rows of teeth. A little below the point of each claw, there is a small hole, through which Leewenhoeck supposes the spider emits a kind of poison (A). These claws are the weapons with which they kill flies, &c. for their food. The belly or hinder part is separated from the head and breast by a small thread-like tube. The skin or outer surface is a hard polished crust.

Spiders have five tubercles, or nipples at the extremity of the belly, whose apertures they can enlarge or contract at pleasure. It is through these apertures that they spin a gluey substance with which their bellies are full. They fix the end of their threads by applying these nipples to any substance, and the thread lengthens in proportion as the animal recedes from it. They can stop the issuing of the threads by contracting the nipples, and re-ascend by means of the claws on their feet, much in the same manner as some men warp up a rope. When the common house-spider begins her web, she generally chooses a place where there is a cavity, such as the corner of a room, that she may have a free passage on each side, to make her escape in case of danger. Then she fixes one end of her thread to the wall, and passes on to the other side, dragging the thread along with her (or rather the thread follows her as she proceeds), till she arrives at the other side, and there fixes the other end of it. Thus she passes and repasses, till she has made as many parallel threads as she thinks necessary for her purpose. After this, she begins again and crosses these by other parallel threads, which may be named the *woof*. These are the toils or snares which she prepares for entangling flies, and other small insects, which happen to light upon it. But, besides this large web, she generally weaves a small cell for herself, where she lies concealed watching for her prey. Betwixt this cell and the large web she has a bridge of threads, which by communicating with the threads of the large one, both give her early intelligence when any thing touches the web, and enables her to pass quickly in order to lay hold of it. There are many other methods of weaving peculiar to different species of spiders; but as they are all intended

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(A) Dr Mead, in his Essay on Poisons, dissents wholly from this opinion, having never been able, on repeated examinations, to discover any such opening, not even in the claws of the largest foreign spider; which being above fifty times bigger than any of the European spiders, would more easily have afforded a view of this opening, if nature had allotted any to this part of the animal. Besides, repeated observations also convinced him that nothing dropped out of the claws, which went always dry while the spider bit any thing, but that a short white proboscis was at the same instant thrust out of the mouth, which instilled a liquor into the wound. And the same author observes, that the quantity of liquor emitted by our common spiders when they kill their prey, is visibly so great and the wounding weapons so minute, that they could contain but a very inconsiderable portion thereof, if it were to be discharged that way. Baker's Microscope, p. 196. Spiders frequently cast their skins, which may be found in the webs perfectly dry and transparent; and from such skins the forceps, or claws, for they are always shed with the skins, may easier be separated, and examined with much greater exactness, than in the common spider while living.

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ed for the same purpose, it is needless to give particular descriptions of them.

That darting out of long threads, however, which has been observed by naturalists, and by means of which some species can convey themselves to great distances, deserves particular notice.

Dr Lister tells us, that attending closely to a spider weaving a net, he observed it suddenly to desist in the mid-work; and turning its tail to the wind, it darted out a thread with the violence and stream we see water spout out of a jet; this thread, taken up by the wind, was immediately carried to some fathoms long; still issuing out of the belly of the animal. By-and-by the spider leaped into the air, and the thread mounted her up swiftly. After this discovery, he made the like observation in near thirty different sorts of spiders; and found the air filled with young and old, sailing on their threads, and doubtless seizing gnats and other insects in their passage, there being often manifest signs of slaughter, legs and wings of flies, &c. on those threads as well as in their webs below. Dr Hulse discovered the same thing about the same time.

Dr Lister thinks there is a fair hint of the darting of spiders in Aristotle, Hist. An. lib. ix. cap. 39. and in Pliny, lib. x. cap. 74. But with regard to their sailing, the ancients are silent, and he thinks it was first seen by him. He also observes of those sailing spiders, that they will often dart, not a single thread only, but "a whole sheaf at once, consisting of many filaments; yet all of one length, all divided each from the other, and distinct until some chance either snap them off or entangle them. But for the most part you may observe, that the longer they grow, the more they spread, and appear to a diligent observer like the numerous rays in the tail of a blazing star. As for that which carries them away in the air, so swift off-hand, it is (as I have already hinted) partly their sudden leap; partly the length and number of the threads projected, the stream of the air and wind beating more forcibly upon them; and partly the posture and management of their feet, which, at least by some sort of them, I have observed to have been used very like wings or oars, the several legs (like our fingers) being sometimes close joined, at other times opened, again bent, extended, &c. according to the several necessities and will of the sailor. To fly they cannot be strictly said, they being carried into the air by external force: but they can, in case the wind suffer them, steer their course, and perhaps mount and descend at pleasure; and to the purpose of rowing themselves along the air, it is observable that they ever take their flight backwards; that is, their head looking a contrary way, like a sculler upon the Thames. It is scarce credible to what height they will mount; which yet is precisely true, and a thing easily to be observed by one that shall fix his eye some time on any part of the heavens, the white webs, at a vast distance, very distinctly appearing from the azure sky; but this is in autumn only, and that in very fair and calm weather." In a letter to Mr Ray, dated January 1670, speaking of the height spiders are able to fly to, he says, "Last October, &c. I took notice, that the air was very full of webs; I forthwith mounted to the top of the highest steeple on the Minster (in York), and could there discern them yet exceeding high above me."

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He further observes, that they not only thus shoot their threads upward, and mount with it in a line almost perpendicular; they also project them in a line parallel to the horizon, as may be seen by their threads running from one wall to another in a house, or from one tree to another in the field, and even from wall to wall across gardens of considerable extent.

The matter of which the spider's threads are formed, we have observed, is a viscid juice, elaborated in the body of the animal, and emitted from papillæ situated at the extremity of the belly; which papillæ are furnished with numerous apertures that do the business of wire-drawers, as it were, in forming the threads. Of these apertures Mr Reaumur observes, there are enough in the compass of the smallest pin's head to yield a prodigious quantity of distinct threads. The holes are perceived by their effects: take a large garden-spider ready to lay its eggs, and applying the finger on a part of its papillæ, as you withdraw that finger it will take with it an amazing number of different threads. Mr Reaumur has often counted 70 or 80 with a microscope, but has perceived that there were infinitely more than he could tell. In effect, if he should say that each tip of a papilla furnished a thousand, he is persuaded he would say much too little. The part is divided into an infinity of little prominences, like the eyes of a butterfly, &c. Each prominence no doubt makes its several threads; or rather between the several protuberances there are holes that give vent to threads; the use of the protuberances, in all probability, being to keep the threads at their first exit, before they are yet hardened by the air, asunder. In some spiders those protuberances are not so sensible; but in lieu thereof there are tufts of hair which may serve the same office, viz. to keep the threads a-part. Be this as it will, there may threads come out at above a thousand different places in every papillæ; consequently the spider, having five papillæ, has holes for above five thousand threads.

Such is the tenuity of the threads in the larger sort of spiders. But if we examine the young produced by those, we shall find that they no sooner quit their egg than they begin to spin. Indeed their threads can scarce be perceived, but the webs may: they are frequently as thick and close as those of house-spiders; and no wonder, there being often four or five hundred little spiders concurring to the same work. How minute must their holes be! the imagination can scarce conceive that of their papillæ! The whole spider is perhaps less than a papilla of the parent which produced it. But there are even some kinds of spiders so small at their birth, that they are not visible without a microscope. There are usually found an infinity of these in a cluster, and they only appear like a number of red points: And yet there are webs found under them, though well nigh imperceptible. What must be the tenuity of one of these threads? Mr Leewenhoek has computed that 100 of the single threads of a full grown spider are not equal to the diameter of the hair of his beard; and consequently, if the threads and hair be both round, ten thousand such threads are not bigger than such a hair. He calculates further, that when young spiders first begin to spin, four hundred of them are not larger than one which is of a full growth; allowing which, four millions of a young spi-

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Aranea. der's threads are not so big as the single hair of a man's beard.

Garden-spiders, particularly the short-legged species, yield a kind of silk, which has by some been judged scarce inferior to that of the silk-worm. Mr Bon of Languedoc, about 70 years ago, contrived to manufacture from it a pair of silk stockings and mittens, of a beautiful natural grey colour, which were almost as handsome and strong as those made with common silk: and he published a dissertation concerning the discovery. But M. Reaumur, being appointed by the Royal Academy to make a farther inquiry into this new silk work, raised several objections and difficulties against it, which are found in the memoirs of the Academy for the year 1710. The sum of what he has urged amounts to this. The natural fierceness of the spiders renders them unfit to be bred and be kept together. Four or five thousand being distributed into cells, fifty in some, one or two hundred in others, the big ones soon killed and eat the less, so that in a short time, there were scarce left one or two in each cell; and to this inclination of mutually eating one another M. Reaumur ascribes the scarcity of spiders, considering the vast number of eggs they lay.

But this is not all: he even affirms, that the spider's bag is inferior to that of the silk worm both in lustre and strength, and that it produces less matter to be manufactured. The thread of the spider's web, he says, only bears a weight of two grains without breaking; and that of the bag bears thirty-six. The latter, therefore, in all probability, is eighteen times thicker than the former; yet it is weaker than that of the silk-worm, which bears a weight of two drams and a half. So that five threads of the spider's bag must be put together to equal one thread of the silk-worm's bag. Now it is impossible these should be applied so justly over one another as not to leave little vacant spaces between them, whence the light will not be reflected; and, of consequence, a thread thus compounded must fall short of the lustre of a solid thread. Add to this, that the spider's thread cannot be wound off as that of the silk-worm may, but must of necessity be carded; by which means, being torn in pieces, its evenness, which contributes much to its lustre, is destroyed. In effect, this want of lustre was taken notice of by M. de la Hire, when the stockings were presented to the Academy. Again, spiders furnish much less silk than the worms: the largest bags of these latter weigh four grains, the smaller three grains; so that 2304 worms produce a pound of silk. The spider-bags do not weigh above one grain; yet when cleared of their dust and filth, they lose two-thirds of their weight. The work of twelve spiders, therefore, only equals that of one silk-worm; and a pound of silk will require at least 27,648 spiders. But as the bags are wholly the work of the females, who spin them to deposit their eggs in, there must be kept 55,296 spiders to yield a pound of silk. Yet will this only hold of the best spiders; those large ones ordinarily seen in gardens, &c. scarce yielding a twelfth part of the silk of the others. Two hundred and eighty of these, he shows, would not yield more than one silk-worm; 663,552 of them would scarce yield a pound.

The act of generation among spiders varies in different species. As these insects prey upon each other

except during the time of their amours, they dare not come within reach of one another but with the utmost caution. They may sometimes be seen stretching out their legs, shaking the web, and tampering with each other by a slight touch with the extremity of their feet; then, in a fright, dropping hastily down their thread, and returning in a few moments to make fresh trial by feeling. When once both parties are well assured of the sex they have to deal with, the approaches of their feet, in order to feel, become more frequent, confidence takes place, and the instant of amorous dalliance ensues. "We cannot," says Lyonnet, "but admire how careful they are not to give themselves up blindly to a passion, or venture on an imprudent step, which might become fatal to them." A caveat this to the human kind. Lister and Lyonnet, two accurate observers, say, that the extremity of those arms, or claws, which the spider uses to grasp his prey with, suddenly opens, as it were by a spring, and lets out a white body, which the male applies beneath the abdomen of the female to fulfil the wish of nature. In the water-spider, the sexual organs are situated at the hinder parts of the male, are curve, and act as it were by a spring: those of the females are distinct. Nature by a thousand varied methods accomplishes her purpose.

Spiders frequently change their colour, which varies much, in respect to season, sex, age, &c. but they are in general more beautifully variegated in autumn; a season not only the most opportune and plentiful respecting their prey, but the time when they arrive at their greatest magnitude, and are in their height of vigour.

The species of aranea enumerated by naturalists amount to upwards of 50; of which it may here suffice to mention a few of the most remarkable.

1. The calycina, with a round pale yellow belly, and two hollow points. It lives in the cups of flowers, after the flower-leaves have fallen off; and catches bees, and other flies, when they are in search of honey.

2. The avicularia, has a convex round breast, hollowed transversely in the middle. It is a native of America, and feeds upon small birds, insects, &c. The bite of this spider is as venomous as that of the serpent.

3. The ocellata, has three pair of eyes on its thighs. It is about the same size with the tarantula, of a pale colour, with a black ring round the belly, and two large black spots on the sides of the breast. It is a native of China.

4. The faccata, has an oval belly, of a dusky iron colour. It lives in the ground, and carries a sack with its eggs where-ever it goes. This sack it glues to its belly, and will rather die than leave it behind.

5. Diadema is the largest spider which this country produces. The abdomen is of an oval form, downy, and of a ruddy yellow colour, which is very variable in different seasons; being sometimes paler, at others very dark coloured. The upper part is beautifully adorned with black and white circles and dots, having a longitudinal band in the middle, composed of oblong and oval-shaped pearl-coloured spots, so arranged as to resemble a fillet, similar to those worn by the eastern kings. The ground upon which this fillet and the white dots are laid, when viewed with a glass, and the sun shining thereon, is beautiful and rich beyond all description. There are varieties in colour of this spider

Aranea.

Aranea.

der when young: some have their abdomen purple, ornamented with white dots, the legs yellow and annulated with a deeper colour; others have their abdomen of a fine red likewise ornamented with white, but the legs of a fine pale green colour; annulated with dark purple or black. It inhabits the birch-tree.

6. The cucurbitina, has a globular yellow belly, with a few black spots. It lives in the leaves of trees, and incloses its eggs in a soft net.

7. The labyrinthica, with a dusky oval belly, a whitish indented line, and a forked anus. The web of this species is horizontal, with a cylindrical well or tube in the middle.

8. The fimbriata, has a black oblong belly, with a white line on each side, and dusky-coloured legs. It lives in water, upon the surface of which it runs with great swiftness.

9. The holosericea, has an ovalish belly covered with a down-like velvet; at the base or under part, it has two yellow spots. It is found in the folded leaves of plants.

10. The viatica, or wanderer, is generally of a yellow colour more or less deep. Sometimes it is whitish and even rather green. The abdomen is large, broad, almost square, with two bands of dark orange, which arising from the thorax descend obliquely on the sides towards the middle. Between the bands are a few small black dots forming a kind of triangle upon the middle of the abdomen. On the thorax are seen two longitudinal bands somewhat green, one on each side. The two foremost pair of legs are very long, and the hinder short; which makes it walk like a crab. It is found upon plants; and is a lively, active, indefatigable hunter. Without any motion of the head, which is furnished with immoveable eyes, it perceives all the flies that hover round about, does not scare them, but stretches over them its arms furnished with feathers, which prove nets in which their wings intangle. It is said to sit on its eggs; which however it often carries about with it, wrapt up in a ball of white silk.

11. The aquatica, is of a livid colour, with an oval belly, and a transverse line, and two hollowed points. It frequents the fresh waters of Europe. But it is in some sort amphibious: for it can live on land as well as in the water, and comes often on shore for its food; yet it swims well in water, both on its belly and back: it is distinguishable by its brightness. In the water its belly appears covered with a silver varnish, which is only a bubble of air attached to the abdomen by means of the oily humours which transpire from its body, and prevent the immediate contact of the water. This bubble of air is made the substance of its dwelling, which it constructs under water: for it fixes several threads of silk, or such fine matter, to the stalks of plants in the water; and then ascending to the surface, thrusts the hinder part of its body above water, drawing it back again with such rapidity, that it attaches underneath a bubble of air, which it has the art of detaining under water, by placing it underneath the threads abovementioned, and which it binds like a covering almost all around the air-bubble. Then it ascends again for another air-bubble; and thus proceeds until it has constructed a large aerial apartment under water, which it enters into or quits at pleasure. The male constructs for himself one near to the female; and when

love invites, he breaks through the thread walls of the female's dwelling, and the two bubbles attached to the bellies of both unite into one, forming one large nuptial chamber. The female is sometimes laid for a whole day together stretched on her back, waiting for the arrival of the male, without motion, and seemingly as if dead. As soon as he enters, and glides over her, she seems to be brought to life again, gets on her legs and runs after the male, who makes his escape with all possible speed. The female takes care of the young, and constructs similar apartments on purpose for them. The figure of this spider has nothing remarkable; and would be overlooked among a crowd of curiosities, if the spectator be unacquainted with its singular art of constructing an aerial habitation under water, and thus uniting together the properties of both elements. It lodges during the winter in empty shells, which it dexterously shuts up with a web.

12. The fasciata, with yellow bands round the belly, and dusky rings on the legs, is a native of Barbary, and is as large as the thumb. It inhabits hedges and thickets: its webs have large meshes, and it resides in the centre. The snares are spread for large flies, wasps, drones, and even locusts: the lesser insects can escape through the meshes. The animal which it entangles is soon bound with strong threads; killed by the spider's jaws; and partly eat, if the spider is hungry: the rest is concealed under some neighbouring dry leaves, covered with a kind of web and a blackish glue in great abundance. Its larder is said to be often plentifully stored:—Its nest is of the size of a pigeon's egg, divided horizontally, and suspended by the threads of the insect, which are of a silvery white, and stronger than silk. The young ones live in amity; but when grown up, are mortal enemies. They never meet but they fight with violence, and their battle only ends with the death of the weakest. The dead body is carefully stored in the larder. Twelve of these spiders, by way of experiment, were shut up together; and, after a battle of eight days, the strongest only remained alive.

13. The tarantula, has the breast and belly of an ash-colour; the legs are likewise ash-coloured, with blackish rings on the under part; the fangs or nippers are red on the inner side, the rest being blackish: Two of its eyes are larger than the other, red, and placed in the front; four other eyes are placed in a transverse direction towards the mouth; the other two are nearer the back: It has two antennæ or feelers. It is a native of Italy, Cyprus, Barbary, and the East Indies. It lives in bare fields, where the lands are fallow, but not very hard; and from its antipathy to damp and shade, chooses for its residence the rising part of the ground facing the east. Its dwelling is about four inches deep, and half an inch wide: at the bottom it is curved, and there the insect sits in wet weather, and cuts its way out if water gains upon it. It weaves a net at the mouth of the hole. These spiders do not live quite a year. In July they shed their skin, and proceed to propagation; which from a mutual distrust, as they frequently devour one another, is a work undertaken with great circumspection. They lay about seven hundred and thirty eggs, which hatches in the spring; but the parent does not live to see her progeny, having expired early in the winter. The Ichneumon fly is their most formidable enemy.

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Plate XV.
(in Vol. I.)

Aranea.

The bite of the tarantula is said to occasion an inflammation in the part, which in a few hours brings on sickness, difficulty of breathing, and universal faintness. The person afterwards is affected with a delirium, and sometimes is seized with a deep melancholy. The same symptoms return annually, in some cases, for several years; and at last terminate in death. Music, it has been pretended, is the only cure. A musician is brought, who tries a variety of airs, till at last he hits upon one that urges him to dance; the violence of which exercise produces a proportionable agitation of the vital spirits, attended with a consequent degree of perspiration, the certain consequence of which is a cure. Such are the circumstances that have been generally related, and long credited, concerning the bite of this animal. Kircherus, in his *Musurgia*, gives a very particular account of the symptoms and cure, illustrated by histories of cases. Among these, he mentions a girl, who being bitten by this insect, could be cured only by the music of a drum. He then proceeds to relate, that a certain Spaniard, trusting to the efficacy of music in the cure of the frenzy occasioned by the bite of the tarantula, submitted to be bitten on the hand by two of these creatures, of different colours, and possessed of different qualities. The venom was no sooner diffused about his body, than the symptoms of the disorder began to appear; upon which harpers, pipers, and other musicians, were sent for, who by various kinds of music endeavoured to rouse him from that stupor into which he was fallen: but here it was observed that the bites of the two insects had produced contrary effects; for by one he was incited to dance, and by the other he was restrained therefrom; and in this conflict of nature the patient expired. The same account is given in his *Phonurgia Nova*, with the addition of a cut representing the insect in two positions, the patient in the action of dancing, together with the musical notes of the tune or air by which in one instance the cure was effected.

In his *Musurgia*, this author, attempting mechanically to account for the cure of the bite of the tarantula by music, says of the poison, That it is sharp, gnawing, and bilious; and that it is received and incorporated into the medullary substance of the fibres. With respect to the music, he says, That the sounds of chords have a power to rarefy the air to a certain harmonical pitch; and that the air thus rarefied, penetrating the pores of the patient's body, affects the muscles, arteries, and minute fibres, and incites him to dance; which exercise begets a perspiration, in which the poison evaporates.

Unsatisfactory as this theory appears, the belief of this strange phenomenon has prevailed among the ablest of modern physicians. Sir Thomas Brown, so far from disputing it, says, That since many attest the fact from experience, and that the learned Kircherus hath positively averred it, and set down the songs and tunes solemnly used for the cure of the disease, and since some also affirm that the tarantula itself will dance at the sound of music, he shall not at all question it*.

Farther, that eminent Italian physician of the last century, Baglivi, a native of Apulia, the country where the tarantula is produced, has written a dissertation *De anatomia, morfu, et effectibus tarantule*. In this he describes the region of Apulia where the tarantula is

produced, with the anatomy and figure of the insect and its eggs, illustrated by an engraving, he mentions, particularly the symptoms that follow from the bite, and the cure of the disease by music, with a variety of histories of cures thus wrought, many of them communicated by persons who were eye-witnesses of the process.

Ludovicus Valetta, a Celestine monk of Apulia, published at Naples, in the year 1706, a treatise upon this spider, in which he not only answers the objections of those who deny the whole thing, but gives, from his own knowledge, several instances of persons who had suffered this way, some of whom were of great families, and so far from being dissemblers that they would at any rate, to avoid shame, have concealed the misfortune which had befallen them.

The honourable Mr Robert Boyle, in his treatise of Languid and Unheeded Motions, speaking of the bite of the tarantula, and the cure of the disease which follows it by means of music, says, That having himself had some doubts about the matter, he was, after strict inquiry, convinced that the relations in the main were true.

Lastly, Dr Mead, in his Mechanical Account of Poisons, has given an essay on the tarantula, containing the substance of the above relations, which he endeavours to confirm by his own reasoning thereon.

Notwithstanding the number and weight of these authorities, and the general acquiescence of learned and ingenious men in the opinion that the bite of the tarantula is poisonous, and that the cure of the disorder occasioned by it is effected by music, we have reason to apprehend that the whole is a mistake.

In the Philosophical Transactions for the year 1672, p. 406. is an extract of a letter from Dr Thomas Cornelio, a Neapolitan physician, to John Doddington, Esq; his majesty's resident at Venice, communicated by the latter, in which, speaking of his intention to send to Mr Doddington some tarantulas, he says, "Mean while I shall not omit to impart to you what was related to me a few days since by a judicious and unprejudicate person; which is, that being in the country of Otranto, where those insects are in great numbers, there was a man who, thinking himself stung by a tarantula, showed in his neck a small speck, about which in a very short time there arose some pimples full of a ferous humour; and that, in a few hours after, the poor man was sorely afflicted with very violent symptoms, as syncope, very great agitations, giddiness of the head, and vomiting; but that, without any inclination at all to dance, and without a desire of having any musical instruments, he miserably died within two days. The same person affirmed to me, that all those that think themselves bitten by tarantulas, except such as for evil ends feign themselves to be so, are for the most part young wanton girls, whom the Italian writers call *Dolci di Sale*; who, by some particular indisposition falling into this melancholy madness, persuade themselves, according to the vulgar prejudice, to have been stung by a tarantula."

Dr Serao, an Italian physician, has written an ingenious book, in which he has effectually exploded this opinion as a popular error; and in the Philosophical Transactions, N^o LX. for the year 1770, p. 236. is a letter from Dominico Cirillo, M. D. professor

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* Inquiries
into Vulgar
Errors,
B. iii. c. 28.

Aranea. fessor of natural history in the university of Naples, wherein, taking notice of Serao's book, he says, That having had an opportunity of examining the effects of this animal in the province of Taranto, where it is found in great abundance, he finds that the surprising cure of the bite of the tarantula by music has not the least truth in it; and that it is only an invention of the people, who want to get a little money by dancing when they say the tarantism begins. He adds, "I make no doubt but sometimes the heat of the climate contributes very much to warm their imaginations, and throw them into a delirium, which may be in some measure cured by music; but several experiment have been tried with the tarantula, and neither men nor animals after the bite have had any other complaint than a very trifling inflammation upon the part, like that produced by the bite of a scorpion, which goes off by itself without any danger at all. In Sicily, where the summer is still warmer than in any part of the kingdom of Naples, the tarantula is never dangerous; and music is never employed for the cure of the pretended tarantism."

Mr Swinburn, when in the country of the tarantula, was desirous of investigating minutely every particular relative to that insect; but the season was not far enough advanced, and no *tarantati* (persons bitten, or pretending to be bitten, by the tarantula) had begun to stir. He prevailed, however, upon a woman who had formerly been bitten, to act the part, and dance the tarantata before him. A great many musicians were summoned, and she performed the dance, as all present assured him, to perfection. At first she lolled stupidly on a chair, while the instruments were playing some dull music. They touched, at length, the chord supposed to vibrate to her heart; and up she sprung with a most hideous yell, staggered about the room like a drunken person, holding a handkerchief in both hands, raising them alternately, and moving in very true time. As the music grew brisker, her motions quickened, and she skipped about with great vigour and variety of steps, every now and then shrieking very loud. The scene was far from pleasant; and, at his desire, an end was put to it before the woman was tired. Wherever the tarantati are to dance, he informs us, a place is prepared for them, hung round with bunches of grapes and ribbons. The patients are dressed in white, with red, green, or yellow ribbons, for those are their favourite colours; on their shoulders they cast a white scarf, let their hair fall loose about their ears, and throw their heads as far back as they can bear it. They are exact copies of the ancient priestesses of Bacchus. The orgies of that god, whose worship, under various symbols, was more widely spread over the globe than that of any other divinity, were no doubt performed with energy and enthusiasm by the lively inhabitants of this warm climate. The introduction of Christianity abolished all public exhibitions of these heathenish rites, and the women durst no longer act a frantic part in the character of Bacchantes. Unwilling to give up so darling an amusement, they devised other pretences; and possession by evil spirits may have furnished them with one. Accident may also have led them to a discovery of the tarantula; and, upon the strength of its poison, the Puglian dames still enjoy their old dance, though time has effaced the memory of its ancient

name and institution: and this Mr Swinburn takes to be the origin of so strange a practice. If at any time these dancers are really and involuntary affected, he supposes it can be nothing more than an attack upon their nerves, a species of St Vitus's dance: and he inclines the more to the idea, as there are numberless churches and places throughout these provinces dedicated to that saint.

Many sensible people of the country, however, differ in opinion from Dr Serao and other authors, who have ridiculed the pretended disorder, and affirmed that the venom of this species of spider can produce no effects but such as are common to all others. The Brindisians say, that the tarantulas sent to Naples for the experiment were not of the true sort, but a much larger and more innocent one; and that the length of the journey, and want of food, had weakened their power so much, as to suffer the Doctor or others to put their arm into the bag where they were kept with impunity. They quote many examples of persons bitten as they slept out in the fields during the hot months, who grew languid, stupid, deprived of all courage and elasticity, till the sound of some favourite tune roused them to dance, and throw off the poison. These arguments of theirs, however, Mr Swinburn thinks of little weight: for they acknowledged that elderly persons were more frequently infected than young ones; and that most of them were women, and those unmarried. No person above the lowest rank in life was ever seized with this malady, nor is there an instance of its causing death. The length of the dance, and the patient's powers of bearing such excessive fatigue in the canicular season, prove nothing; because every day, at that time of the year, peasants may be seen dancing with equal spirit and perseverance, though they do not pretend to be seized with the tarantism. The illness may therefore be attributed to hysterics, excessive heat, stoppage of perspiration, and other effects of sleeping out of doors in a hot summer air, which is always extremely dangerous, if not mortal, in most parts of Italy. Violent exercise may have been found to be a certain cure for this disorder, and continued by tradition, though the date and circumstances of this discovery have been long buried in oblivion; a natural passion for dancing, imitation, custom of the country, and a desire of raising contributions upon the spectators, are probably the real motives that inspire the tarantati. Before Serao's experiments, the tarantula had been proved to be harmless, from trials made in 1693 by Clarizio, and in 1740 at Lucera by other naturalists.

ARANJUEZ, a town in the province of New Castile, where the king of Spain has a palace and gardens which are reckoned the most delightful in the world.

This place is 20 miles from Madrid, by a noble road, planted on each side with trees, lately made at the expence of 120,000*l.* Sterling. It is delightfully situated at the conflux of the rivers Tagus and Jarama; which run through the gardens, and add new beauty to this charming spot, where art and nature seem to go hand in hand with the most pleasing and rural simplicity. On one side, fine avenues of stately oaks and lofty elms convey the truest ideas of magnificence, while they afford the most reviving shade; on the other, the sudden transitions to lawns and wilder-

Aranjuez. nefs, the cascades of water breaking through the thickets, the tuneful songs of numberless birds sheltered in these cold recesses, the occasional appearance and passage of the monarch attended by the grandees of his kingdom; all these objects united, and concentrated in one point, fill the imagination with pleasing ideas, and impress the mind of a traveller with a thousand agreeable sensations.

The general situation is in a very large plain surrounded with large hills, of a most disagreeable aspect indeed, but seldom appearing, being well hidden by the noble rows of trees that extend across the flat in every direction. The main body of the palace is an old building, to which have been lately added two new wings. The first part of the building was erected by Philip II. who purchased the estate, planted many of the avenues, and, in order to extend his chace, or to indulge his splenetic disposition, had all the vines that grew on the hills rooted up. By that means he drove away the inhabitants, and rendered the environs of his villa a perfect desert.—The apartments are good; but contain nothing very particular to take off from the enjoyment of so many fine objects abroad. In one of the new wings is a play-house, and in the other a chapel. Part of the ceiling of the former was painted by Mengs, who was also sent to Rome to paint a holy family for the principal altar in the chapel. There are seven fine pictures of Luca Jordano in the apartment called *El Cabinete Antiguo*, and six others in that *De los Mayordomos*. The portraits of the grand duke and duchess of Tuscany, by Mengs, are in a new apartment called the *king's dressing-room*. In the chapel, over the great altar, there is a fine picture of the Annunciation, by Titian, presented to him by Charles V. and brought from the convent of Juste, after the death of that emperor. The porcelain cabinet, where there are several large pieces of the king's own manufactory, is also an object of curiosity to a traveller.

As to the gardens, the whole of them may be thrown into three grand divisions, distinguished by the names of *La Huerta Valenciana*, *Los Deleites*, and *El Cortijo*. In the *Huerta Valenciana*, agriculture and gardening are carried on in the same manner as in that fruitful province, and they plough with horses. In the *Cortijo* they use oxen, as in Andalusia; and in other places they scratch up the ground with mules, as is still practised in some parts of Spain. Which ever way one looks round, a constant variety pleases the eye, and enraptures the mind. At one moment the sturdy buffalo moves before you, drawing his heavy burden; soon after, the slow camel, with his ponderous load; while the swift zebra with his striped garment frisks over the plains. If you approach the farm, every object of convenience is consulted, and in the dairy every degree of neatness. The Dutch cow enjoys a luxuriant pasture, the brood mares greatly enliven the landscape, and the stables are filled with the most excellent horses. And an immense nursery furnishes all manner of trees and plants. The fine avenue, which serves also for a public walk, called *Calle de Reyna*, has nothing equal to it at Versailles. It is three miles long, quite straight from the palace gate, crossing the Tagus twice before it loses itself in the thickets, where some noble spreading elms and weeping poplars hang beautifully over the deep still pool. Near this road is a flower-

garden for the spring, laid out with great taste by Mr Wall during his ministry. The gay variety of flowers at this time of year is particularly pleasing to the eye; but its beauty soon fades on the approach of summer. As the weather grows hot, the company that chooses to walk retires to a garden in an island of the Tagus, on the north side of the palace. This is a heavenly place, cut into various walks and circular lawns, which in their primitive state may have been very stiff and formal: but in the course of a century, Nature has obliterated the regular forms of art; the trees have swelled out beyond the line traced for them, and destroyed the enfilade by advancing into the walks or retiring from them. The sweet flowering shrubs, instead of being clipped and kept down, have been allowed to shoot up into trees, and hang over the statues and fountains they were originally meant to serve as humble fences to. The jets-d'eau dash up among the trees, and add fresh verdure to the leaves. The terraces and balustrades built along the river, are now overgrown with roses, and other luxuriant bushes, hanging down into the stream, which is darkened by the large trees growing on the opposite banks. Many of the statues, groupes, and fountains, are handsome, some masterly, the works of Algardi: all are placed in charming points of view, either in open circular spots at a distance from the trees, or else in gloomy arbours, and retired angles of the wood. The banks of this wood called the *Ila*, are also enlivened by elegant yachts for the amusement of the royal family.

The town or village formerly consisted of the palace, its offices, and a few miserable huts, where the ambassadors, and the attendants of the court, endeavoured to lodge themselves as well as they could, but always very uncomfortably; many of the habitations were vaults half under ground. What determined the king to build a new town, and to embellish the environs, was an accident that happened at the nuncio's; a coach broke through the ceiling of his dining-room, and fell in upon the table. The court then began to apply very considerable sums to the purpose of erecting proper dwellings for the great number of persons that flock to the place where the sovereign resides; near 10,000 are supposed to live here two or three months in spring; the king keeps 115 sets of mules, which require a legion of men to take care of them. Above a million sterling has been laid out at Aranjuez since the year 1763; and it must be acknowledged, that wonders have been performed: several fine streets drawn in straight lines with broad pavements, a double row of trees before the houses, and a very noble road in the middle; commodious hotels for the ministers and ambassadors; great squares, markets, churches, a theatre, and an amphitheatre for bull-feasts, have been raised from the ground; besides the accession of two new wings to the palace. Neatness and convenience have been more studied and sought for than show in the architecture, but altogether the place has something truly magnificent in the coup d'œil.

ARAR, (Cæsar, Strabo); *Araris*, (Dio Cassius); *Saucona*, (Ammian): A river of Celtic Gaul, now the *Saone*; which rises out of mount Vogesus on the confines of Lorraine, runs through the Franche Comte and Burgundy, and below Lyons falls into the Rhone. It is so incredibly slow, that the eye cannot distinguish which

Ararat.

which way it moves, (Cæsar); and therefore Pliny calls it the *Sluggish river*. Its course is from north to south. It is famous for a bridge of Cæsar, which was built by the soldiers in one day. It is navigable equally with the Rhone.

ARARAT, the name of the mountain on which Noah's ark rested, after the abatement of the waters of the universal deluge. Concerning this mountain there are various conjectures; though it is almost universally allowed to be in Armenia Major. Some are of opinion that it is one of the mountains which divide Armenia on the south from Mesopotamia and that part of Assyria inhabited by the *Curds*; from whom these mountains took the name of *Curdu* or *Cardu*, by the Greeks turned into *Gordyæi*, &c. Others, that it lies towards the middle of Armenia, near the river Araxes, above 280 miles distant from the above mentioned mountains, making it belong to mount Taurus; but the Armenians are positive that Noah's Ararat is no other than a mountain to which they now give the name of *Mafis*, which lies about 12 leagues to the east of Erivan, and four leagues from the Aras. It is encompassed by several petty hills: on the tops of them are found many ruins, thought to have been the buildings of the first men, who were, for some time, afraid to descend into the plains. It stands by itself, in form of a sugar-loaf, in the midst of a very large plain, detached, as it were, from the other mountains of Armenia, which make a long chain. It consists, properly speaking, of two hills; the lesser of which is the more sharp and pointed: the higher, on which it is said the ark rested, lies to the north-west of it, and rises far above the neighbouring mountains. It seems so high and big, that, when the air is clear, it may be seen four or five days journey off; yet travellers think the height is not extraordinary. Chardin is of opinion that he passed a part of mount Caucasus which is higher; and Poulet thinks the height of mount Mafis, or Ararat, not above twice as great as that of mount Valerian near Paris. They therefore think that its being visible at such a great distance is owing to its lonely situation in a vast plain, and upon the most elevated part of the country, without any mountains before it to obstruct the view. Nor is the snow with which it is always covered from the middle upwards any argument for its height; for, in this country, ice hath often been observed in the mornings of the middle of July. (See ARMENIA). Certain it is, however, that this mountain hath never yet been ascended; which the Armenians pretend was owing to the interposition of angels, in order to disappoint the curiosity of those who wanted to advance to such a sacred place as that whereon the ark rested: but the excess of cold may very reasonably be supposed able to frustrate all such attempts, without any supernatural interposition. The most distinct account we have of this mountain is that given by Mr Tournefort; which, however, being much swelled with immaterial circumstances, it is needless to trouble our readers with at length. He tells us that this mountain is one of the most disagreeable sights upon earth, without either houses, convents, trees, or shrubs; and seems as if continually wasting and mouldering away. He divides it into three regions: The lowermost, he says, is the only one which contains any human creatures, and is occupied by a few miserable shepherds that tend scab-

by flocks; and here are also found some partridges: the second is inhabited by crows and tigers; and all the rest is covered with snow, which half the year is involved in thick clouds. On the side of the mountain that looks towards Erivan is a prodigious precipice, from whence rocks of an immense size are continually tumbling down with a hideous noise. This precipice seems quite perpendicular; and the extremities are rough and blackish, as if smutted with smoke. The soil of the mountain is loose, and on the sandy parts it is impossible to take a firm step; so that our traveller encountered great difficulties in his ascent and descent of this mountain; being often obliged, in order to avoid the sand, to betake himself to places where great rocks were heaped on one another, under which he passed as through caverns, or to places full of stones, where he was forced to leap from one stone to another. If we may believe Struys, a Dutch writer, however, all these difficulties may be surmounted. He assures us, he went five days journey up mount Ararat, to see a Romish hermit: that he passed through three regions of clouds; the first dark and thick, the next cold and full of snow, and the third colder still: that he advanced five miles every day; and when he came to the place where the hermit had his cell, he breathed a very serene and temperate air; that the hermit told him, he had perceived neither wind nor rain all the 25 years he had dwelt there; and that on the top of the mountain there still reigned a greater tranquillity, whereby the ark was preserved uncorrupted. He farther pretends, that the hermit gave him a cross made out of the wood of the ark, together with a certificate; a formal copy of which the author has given in his sham relation.

ARASSI, a maritime, populous, and trading town of Italy, in the territory of Genoa. E. Long. 7. 20. N. Lat. 44. 3.

ARATEIA, in antiquity, a yearly festival celebrated at Sicyon, on the birth-day of Aratus, wherein divers honours were paid by a priest consecrated to this service, who for distinction's sake wore a ribband bespangled with white and purple spots. The arateia were solemnized with much pomp of music, the choiristers of Bacchus attending.

ARATUS, general of the Achæans, conquered Niocles tyrant of Sicyon. Two years after, he surprised the castle called *Acrocorinthus*, and drove out the king of Macedonia: he delivered Argos from its tyrants, and was poisoned by Philip II. king of Macedonia, whom he had newly restored: he was about 62 when he died, the second year of the 141st Olympiad. He was interred at Sicyon, and received the greatest honours from his countrymen. His son, who had also been prætor, was poisoned by king Philip. Polybius gives us so great a character of Aratus the father's Commentaries or History, that the loss of so valuable a work is highly to be regretted.

ARATUS, a Greek poet, born at Soli, or Solæ, a town in Cilicia, which afterwards changed its name, and was called *Pompeopolis*, in honour of Pompey the Great. He flourished about the 124th, or, according to some, the 126th Olympiad, in the reign of Ptolemy Philadelphus king of Egypt. He discovered in his youth a remarkable poignancy of wit, and capacity for improvement; and having received his education

Ararat,
Aratus.

under

Aratus
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Araxes.

under Dionysius Heracleotes, a Stoic philosopher, he espoused the principles of that sect. Aratus was physician to Antigonus Gonatus, the son of Demetrius Poliorcetes, king of Macedon: this prince, being a great encourager of learned men, sent for him to court, admitted him to his intimacy, and encouraged him in his studies. The *Phænomena* of Aratus, which is still extant, gives him a title to the character of an astronomer as well as a poet; in this piece he describes the nature and motion of the stars, and shows the particular influences of the heavenly bodies, with their various dispositions and relations. He wrote this poem in Greek verse: it was translated into Latin by Cicero; who tells us, in his first book *De oratore*, that the verses of Aratus are very noble. This piece was translated by others as well as Cicero; there being a translation by Germanicus Cæsar, and another into elegant verse by Festus Avienus. An edition of the *Phænomena* was published by Grotius, at Leyden, in quarto, 1600, in Greek and Latin, with the fragments of Cicero's version, and the translations of Germanicus and Avienus, all which the editor has illustrated with curious notes. He was certainly much esteemed by the ancients, since we find so great a number of scholiasts and commentators upon him. There are several other works also ascribed to Aratus. Suidas mentions the following: Hymns to Pan; Astrology and Astrothesy; a composition of Antidotes; an *Επιθυσιον* on Theopropus; an *Ηθοποια* on Antigonus; an Epigram on Phila, the daughter of Antipater, and wife of Antigonus; an Epicedium of Cleombrotus; a correction of the *Odyssey*; and some Epistles, in prose. Virgil, in his *Georgics*, has imitated or translated many passages from this author; and St Paul has quoted a passage of Aratus. It is in his speech to the Athenians (*Acts xvii. 28.*) wherein he tells them, that some of their own poets have said, *Τὸ γὰρ καὶ γινώσκουμεν*: "For we are also his offspring". These words are the beginning of the fifth line of the *Phænomena* of Aratus.

ARAVA, a fortress of Upper Hungary, in a county and on a river of the same name. E. Long. 20. 0. N. Lat. 49. 20.

ARAUCO, a fortress and a town of Chili, in South America; situated in a fine valley, on a river of the same name. The natives are so brave, that they drove the Spaniards out of their country, though they had no fire arms. W. Long. 51. 20. S. Lat. 42. 30.

ARAUSIO, or *Civitas Arausiensis*, or *Arausicorum* (Notitiæ); *Colonia Secundanorum* (Mela, Pliny, Coins); so called, because the veterans of the second legion were there settled: The capital of the Cavares in Gallia Narbonensis. Now *Orange*, in the west of Provence, on an arm of the river Egue, which soon after falls into the Rhone, from which it is distant a league to the east, at the foot of a mountain. Here is an ancient amphitheatre to be still seen. E. Long. 4. 46. Lat. 44. 10.

ARAW, a town of Swisserland, in Argow, seated on the river Aar. It is handsome, large, and remarkable for its church, its fountain, and the fertility of the soil. E. Long. 18. 0. N. Lat. 47. 25.

ARAXES, now the Aras, a river of Armenia Major, which takes its rise in a mountain called *Albor*, where the Euphrates also hath its origin. From this

mountain it runs eastward with a serpentine course, discharging itself into the Caspian sea, after a run of upwards of 500 miles, during which it receives some considerable rivers. Some have imagined that it hath its rise in mount Ararat; but Tournefort assures us that it comes no nearer that mountain than 12 miles. The Araxes is a very rapid river, and is supposed to be the Gihon mentioned by Moses. Besides this extreme rapidity, it is very apt to overflow after rains; so that they have in vain endeavoured to build bridges over it; tho' some of them appear, from the few arches remaining, to have been built of the best materials, and in the strongest manner. Such is the vehemence of its current after the thawing of the adjacent snows, or some fierce rains, that neither banks nor dykes can resist it; so that nothing can be more terrible than the noise and violence of its waves at such times: but in winter, when its waters are low, it is fordable in some places on camels.

ARBA (anc. geog.), an island and city of Illyria, now *Arbe*, in the gulph of Quarnaro. Of this island, which has been but slightly noticed by geographers, we have the following description by the Abbé Fortis.

In the Roman times, it is probable that there were no other cities in Arbe but that which bears the name of the island, in the neighbourhood of which ancient monuments are frequently dug up.

This city of Arbe, though the capital of a small island, not above 30 miles round, wholly uncultivated, and uninhabitable in the highest part that faces the channel of Morlacca, has always maintained itself with decorum. That it was inhabited by civilized people in the Roman times, is evident, by the inscriptions that have been frequently discovered there, and others still remain at Arbe. In the lower times it suffered all the calamities to which the neighbouring countries were subjected, but it always recovered itself with honour even after dissolution.

The archives of the community of Arbe contain some ancient papers that are truly valuable, and they are kept with great jealousy; by them it appears, that, in the eleventh century, gold and silk were not rare among the inhabitants. Arbe was subject to the kings of Hungary; afterwards it became dependent on Venetian feudatories; and at last was taken under the immediate dominion of the most serene republic, by which a governor is appointed who has the title of count and captain. The number of people on the island does not much exceed three thousand souls, distributed in a few parishes, which might be officiated by a small number of priests: Yet, through a monstrous inconsistency that falls very heavy on the poor inhabitants, they have to maintain no less than three convents of friars, and as many of nuns, besides the considerable charge of near sixty priests, who have a very scanty provision.

The climate of Arbe is none of the happiest; the winter season is horrid, especially when agitated by the violent northerly winds, which sometimes transform the intermediate seasons into winter, and cause the summer itself to disappear. These furious winds do great damage to the island, particularly in the winter and spring. Two years ago, about twelve thousand sheep perished in one night, of cold, in the common pastures of the mountain; where, according to the cus-

Arba.

Arba.

tom over all Dalmatia, they are left in the open air the whole year round. The salt fog raised by the dreadful commotion of the waves, which often roars between the mountains of Arbe and the opposite Alps, in the narrow channel of Morlacca, consumes all the buds of the plants and corn, if it happens to be driven upon the island by the wind; and it is followed by a cruel scarcity of every kind of product. This calamity communicates its baneful influence even to the flesh of the animals left on the pastures, that becomes ill-tasted in consequence of the bitterness and bad nourishment of the food. Abstracting from these irregularities, the air of Arbe is healthful; nor ought the constant summer fevers among the inhabitants to be attributed to its influence, as they are, more probably, derived from unwholesome food, and a way of life differing little from that of the Hottentots.

The appearance of the island is exceedingly pleasant. On the east it has a very high mountain, of the same substance as the Morlacca, of which it was once a part. At the foot of this mountain, the rest of the island is extended to the westward, and divided into beautiful and fruitful plains interspersed with little hills fit to bear the richest products. At the extremity that looks to the north, a delightful promontory, called Loparo, stretches into the sea; it is crowned with little hills, which almost quite inclose a fine cultivated plain. Near this promontory are the two small islands of S. Gregorio and Goli, very useful to shepherds and fishers. The coast of Arbe, that faces the Morlacca mountains, is quite steep and inaccessible; and the channel between them is extremely dangerous, being exposed to furious winds, and without a single port on either side. The long and narrow island of Dolin, lying parallel to the island of Arbe, along the coast of Barbado, forms a channel less dangerous, though by no means so secure as it is beautiful to look at. There are several harbours in the neighbourhood of the city of Arbe, by which the trade of the best part of the island is facilitated.

The city stands on a rising ground between two harbours, which form a peninsula; it contains about a thousand inhabitants, among whom are many noble families, but few of them are rich. Among the most remarkable curiosities of the island, the Arbegiani are proud of many egregious reliques, and particularly of the head of S. Cristofano their protector; but the lovers of sacred antiquity will find something much more singular in the three heads of Shadrach, Meshech, and Abednego, which are venerated there with great devotion. Four of the principal gentlemen are keepers of the sanctuary, and to their care the precious records of the city are also committed. Among these records there is a transaction of MXVIII, by which the city of Arbe promises to the Doge of Venice, Ottone Orseolo, a tribute of some pounds *de seta serica*, "of wrought silk," and in case of contravention, pounds *de ruo obrizo*, "of pure gold."

In the last age there was a learned bishop of Arbe, named Ottavio Spaderi, who would not permit the reliques of S. Cristofano to be exposed to the public veneration, on the solemnity of the saint's day, because he doubted of their authenticity. The mob rose, and was going to throw him down from the top of the hill on which the cathedral stands; nor did the tumult

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cease after the day was past. The government sent an armed vessel to deliver the prelate from the danger he was in: and the Pope thought proper to give him a more tractable spouse in Italy.

The nature of the soil of Arbe is not the same in every situation: nay it would be difficult to find a country where there is so great a variety in so little space. There is a very great difference between the ground of the extremity of the mountain above the channel of Barbado, and the sides of it on the one part towards the island, and on the other facing the ridge of Morlacca. Nor is the top of the mountain itself always of the same structure: for in some parts it is extended in a fine level plain, partly woody and partly cultivable; in other places it is quite rocky, and composed of bare marble. The ground at the foot of the mountain, where it stretches towards the shore, opposite to Jablanaz, is nothing but marble; and in the district of Barbado it is gravelly, and a good soil for vines. The wine of Barbado is of excellent quality, and in great estimation; hardly any other product is cultivated along that coast, as the vines succeed so well, notwithstanding the negligent culture. Below the pretended ruins of Colento the land bears vines, olives, mulberry, and other fruit trees, and also corn in the lowest parts. All the lower part of the island is composed alternatively of little hills and valleys, and of a substance for the most part very different from that of the mountain and its adjacencies. As the organization of the mountain is wholly of marble, so that of the hills is generally arenaceous. The whetstone forms a large part, and frequently contains *ostracites* and *lenticulares*; the exterior stratum is commonly friable. The valleys, which according to appearances should be full of sand, are provided with an excellent soil, with such a mixture of very minute sand as is requisite to keep it light. Springs of fresh water are by nature well distributed over the island, and maintain a proper humidity when the summer is not excessively dry; so that the dark verdure of the hills covered with wood, the luxuriance of the vines, and freshness of the corn-ground, form a spectacle extremely cheerful and agreeable.

The island of Arbe would have every thing requisite for the subsistence of its small population, if the land was cultivated by a people less stupid and lazy. It produces, however, firewood, of which many cargoes are annually sent to Venice; corn, oil, excellent wine, brandy, and silk, since very ancient times; it also exports hides, wool, sheep, hogs, and horses of a good breed. There is also abundance of good salt made on the island; and the fishing of tunny and mackerel, notwithstanding it is managed in a slovenly and aukward manner, makes no inconsiderable article of trade to the Arbegiani, who, like all their neighbours, find their account in selling this commodity to strangers rather than to the Venetians. Yet, with all these natural products, the island is very far from being rich, or even in a tolerable flourishing state: because there is much land left uncultivated, and the peasants are lazy.

ARBACES governed Media under Sardanapalus. Seeing him spinning among a company of his women, he stirred up his people to revolt, and dethroned Sardanapalus: who thereupon burnt himself in his palace. Arbaces being crowned, began the monarchy of the Medes, which lasted 317 years under nine kings, till

C c

Astyages

Arba.

Arbalest,
Arbela.

Assyages was expelled by Cyrus. Arbaces reigned 22 years, and died A. M. 3206. See MEDIA.

ARBALEST, or CROSS BOW. See CROSS-BOW.

ARBELA, now IRBIL, a city of Assyria, lying in E. Long. 44. 5. N. Lat. 35. 15. It is famous for the last and decisive battle fought in its neighbourhood between Alexander the Great and Darius Codomannus. This battle was fought 331 years before Christ, and the event of it determined the fate of the Persian empire. Arrian relates, that Darius's army consisted of a million of foot and 40,000 horse; according to Diodorus, there were 200,000 horse and 800,000 foot; Plutarch relates, that the horse and foot together made up a million: and Justin gives us exactly half Diodorus's number. The Macedonian army, according to Arrian, consisted of 40,000 foot and 7000 horse.

Gillies's
Hist. of
Greece.

Upon receiving notice of the vast strength of the enemy, Alexander expressed neither surprise nor apprehension; but having "commanded a halt, he encamped four days, to give his men rest and refreshment. His camp being fortified by a good intrenchment, he left in it the sick and infirm, together with all the baggage; and, on the evening of the fourth day, prepared to march against the enemy with the effective part of his army, which was said to consist of 40,000 infantry and 7000 horse, unincumbered with any thing but their provisions and armour. The march was undertaken at the second watch of the night, that the Macedonians, by joining battle in the morning, might enjoy the important advantage of having an entire day before them, to reap the full fruits of their expected victory. About half way between the hostile camps, some eminences intercepted the view of either army. Having ascended the rising ground, Alexander first beheld the Barbarians, drawn up in battle array, and perhaps more skilfully marshalled than he had reason to apprehend. Their appearance, at least, immediately determined him to change his first resolution. He again commanded a halt, summoned a council of war; and different measures being proposed, acceded to the single opinion of Parmenio, who advised that the foot should remain stationary until a detachment of horse had explored the field of battle, and carefully examined the disposition of the enemy. Alexander, whose conduct was equalled by his courage, and both surpassed by his activity, performed those important duties in person at the head of his light horse and royal cohort. Having returned with unexampled celerity, he again assembled his captains, and encouraged them by a short speech. Their ardour corresponded with his own; and the soldiers, confident of victory, were commanded to take rest and refreshment.

"Meanwhile Darius, perceiving the enemy's approach, kept his men prepared for action. Notwithstanding the great length of the plain, he was obliged to contract his front, and form in two lines, each of which was extremely deep. According to the Persian custom, the king occupied the centre of the first line, surrounded by the princes of the blood and the great officers of his court, and defended by his horse and foot guards, amounting to 15,000 chosen men. These splendid troops, who seemed fitter for parade than battle, were flanked on either side by the Greek mercenaries and other warlike battalions, carefully selected from the whole army. The right wing consisted of the

Medes, Parthians, Hyrcanians, and Sacæ; the left was chiefly occupied by the Bactrians, Persians, and Cardusians. The various nations composing this immense host were differently armed, with swords, spears, clubs, and hatchets; while the horse and foot of each division were promiscuously blended, rather from the result of accident than by the direction of design. The armed chariots fronted the first line, whose centre was farther defended by the elephants. Chosen squadrons of Scythian, Bactrian, and Cappadocian cavalry advanced before either wing, prepared to bring on the action, or after it began to attack the enemy in flank and rear. The unexpected approach of Alexander within sight of his tents prevented Darius from fortifying the wide extent of his camp; and, as he dreaded a nocturnal assault from enemies who often veiled their designs in darkness, he commanded his men to remain all night under arms. This unusual measure, the gloomy silence, the long and anxious expectation, together with the fatigue of a restless night, discouraged the whole army, but inspired double terror into those who had witnessed the miserable disasters on the banks of the Granicus and the Issus.

"At day-break Alexander disposed his troops in a manner suggested by the superior numbers and deep order of the enemy. His main body consisted in two heavy-armed phalanxes, each amounting to above 16,000 men. Of these the greater part formed into one line; behind which he placed the heavy-armed men, reinforced by his targeteers, with orders, that when the out-spreading wings of the enemy prepared to attack the flanks and rear of his first line, the second should immediately wheel to receive them. The cavalry and light infantry were so disposed on the wings, that while one part resisted the shock of the Persians in front, another, by only facing to the right or left, might take them in flank. Skillful archers and darters were posted at proper intervals, as affording the best defence against the armed chariots, which (as Alexander well knew) must immediately become useless whenever their conductors or horses were wounded.

"Having thus arranged the several parts, Alexander with equal judgment led the whole in an oblique direction towards the enemy's left; a manœuvre which enabled the Macedonians to avoid contending at once with superior numbers. When his advanced battalions, notwithstanding their nearness to the enemy, still stretched towards the right, Darius also extended his left, till, fearing that by continuing this movement his men should be drawn gradually off the plain, he commanded the Scythian squadrons to advance, and prevent the farther extension of the hostile line. Alexander immediately detached a body of horse to oppose them. An equestrian combat ensued, in which both parties were reinforced, and the barbarians finally repelled. The armed chariots then issued forth with impetuous violence; but their appearance only was formidable; for the precautions taken by Alexander rendered their assault harmless. Darius next moved his main body, but with so little order, that the horse, mixed with the infantry, advanced, and left a vacancy in the line, which his generals wanted time or vigilance to supply. Alexander seized the decisive moment, and penetrated into the void with a wedge of squadrons. He was followed by the nearest sections of the phalanx, who rushed

Arbela.

Arbela rushed forward with loud shouts, as if they had already pursued the enemy. In this part of the field, the victory was not long doubtful: after a feeble resistance, the barbarians gave way; and the pusillanimous Darius was foremost in the flight.

Arbitrary

"The battle, however, was not yet decided. The more remote divisions of the phalanx, upon receiving intelligence that the left wing, commanded by Parmenio, was in danger, had not immediately followed Alexander. A vacant space was thus left in the Macedonian line, through which some squadrons of Persian and Indian horse penetrated with celerity, and advanced to the hostile camp. It was then that Alexander derived signal and well-earned advantages from his judicious order of battle. The heavy-armed troops and targeteers, which he had skilfully posted behind the phalanx, speedily faced about, advanced with a rapid step, and attacked the barbarian cavalry, already entangled among the baggage. The enemy, thus surprised, were destroyed or put to flight. Meanwhile, the danger of his left wing recalled Alexander from the pursuit of Darius. In advancing against the enemy's right, he was met by the Parthian, Indian, and Persian horse, who maintained a sharp conflict. Sixty of the *Companions* fell; Hephæstion, Cœnus, and Menidas, were wounded. Having at length dissipated this cloud of cavalry, Alexander prepared to attack the foot in that wing. But the business was already effected, chiefly by the Thessalian horse; and nothing remained to be done, but to pursue the fugitives, and to render the victory as decisive as possible.

"According to the least extravagant accounts, with the loss of 500 men he destroyed 40,000 of the barbarians, who never thenceforth assembled in sufficient numbers to dispute his dominion in the East. The invaluable provinces of Babylonia, Susiana, and Persis, with their respective capitals of Babylon, Susa, and Persepolis, formed the prize of his skill and valour. The gold and silver found in those cities amounted to thirty millions Sterling; the jewels and other precious spoil, belonging to Darius, sufficed, according to Plutarch, to load 20,000 mules and 5000 camels." The consequences of this victory the reader will find narrated under the article *PERSIA*.

ARBERG, a town of Swisserland, in the canton of Bern, with a handsome castle, where the bailiff resides. It is seated on the river Aar, in a kind of island. E. Long. 17. 15. N. Lat. 47. 0.

ARBITER, in the civil law, implies a judge nominated by the magistrate, or chosen voluntarily by the two contending parties, in order to decide their differences.

The civilians make a difference between *arbiter* and *arbitrator*, though both found their power on the compromise of the parties; the former being obliged to judge according to the customs of the law; whereas the latter is at liberty to use his own discretion, and accommodate the difference in the manner that appears to him most just and equitable.

ARBITRARY, that which is left to the choice or arbitration of men, or not fixed by any positive law or injunction.

ARBITRARY Punishment, in law, denotes such punishments as are by statute left to the discretion of the judge. It is a general rule in arbitrary punishments,

that the judge cannot inflict death. Hence all punishments that are not capital have acquired the name of *arbitrary punishments*, even although they be expressly pointed out by statute.

ARBITRATION is where the parties, injuring and injured, submit all matters in dispute, concerning any personal chattels or personal wrong, to the judgment of two or more arbiters or arbitrators; who are to decide the controversy: and if they do not agree, it is usual to add, that another person be called in as umpire, (*imperator* or *impar*), to whose sole judgment it is then referred; or frequently there is only one arbitrator originally appointed. This decision, in any of these cases, is called an *award*. And thereby the question is as fully determined, and the right transferred or settled, as it could have been by the agreement of the parties or the judgment of a court of justice. See also *Law*, Part III. N^o clxxxv. 15, &c.

ARBITRATOR, a private extraordinary judge, chosen by the mutual consent of parties, to determine controversies between them. See *ARBITER* and *ARBITRATION*.

ARBOIS, a small populous town of France, in the Franche Compté, famous for its wines. E. Long. 5. 40. N. Lat. 46. 55.

ARBON, an ancient town in Swisserland, on the south banks of the lake Constance, in Thurgaw. It has a castle built by the Romans, and is under the jurisdiction of the bishop of Constance. In the time of war, the Swiss have a right to put in a garrison. The Popish and Protestant religions are equally tolerated in this town. E. Long. 9. 30. N. Lat. 4. 38.

ARBOR, in botany, a tree. Trees are by Linnæus classed in the seventh family of the vegetable kingdom, and are distinguished from shrubs in that their stems come up with buds on them; but this distinction holds not universally, there being rarely any buds on the large trees in India.

ARBOR, in mechanics, the principal part of a machine which serves to sustain the rest; also the axis or spindle on which a machine turns, as the *arbor* of a crane, windmill, &c.

ARBOR Diana. See *CHEMISTRY-Index*.

ARBOR Vita. See *THUYA*.

ARBORESCENT, an epithet applied to such objects as resemble trees.

ARBORESCENT Star-fish, in zoology, a species of *asterias*. See *ASTERIAS*.

ARBORIBONZES, in modern history, priests of Japan, who live an erratic life, and subsist on alms. They dwell in caverns, and cover their heads with bonnets made of the bark of trees.

ARBORIST, a person skilled in that part of botany which treats of trees.

ARBOUR, in gardening, a kind of shady bower, formerly in great esteem; but of late rejected on account of its being damp and unwholesome.

Arbours are generally made of lattice-work, either of wood or iron; and covered with elms, limes, hornbeams; or with creepers, as honeysuckles, jasmines, or passion-flowers; either of which will answer the purpose very well, if rightly managed.

ARBROATH. See *ABERBROTHIC*.

ARBURG, a town of Swisserland, in the canton of Bern, on the river Aar. It is small, but very strong, being

Arbitra-
tion
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Arburg.

Arbuscula

Arbuthnot

Arbuthnot

being seated on a rock, and defended by a good fortress, cut out of the rock. E. Long. 17. 55. N. Lat 47. 10.

ARBUSCULA is used by Bradley to denote a little or dwarf tree, above the rank of shrubs but below that of trees; such, *e. gr.* as the elder.

ARBUSTUM implies a number or multitude of trees planted for the fruit sake.

The word was more peculiarly applied to a place planted with trees for fastening vines to, which are hence called by Columella *arbutivæ*.

ARBUSTUM is sometimes also used to denote an orchard, or field wherein trees are planted at such distance that there is room for ploughing and growing corn between.

ARBUTHNOT (Alexander), principal of the university of Aberdeen in the reign of James VI. of Scotland, was born in the year 1538. He studied first at Aberdeen; and was afterwards sent over to France, where, under the famous Cujacius, he applied himself to the study of the civil law. In the year 1563, he returned to Scotland, and took orders. Whether he was ordained by a bishop or by presbyters, is a matter of uncertainty. In 1568, he was appointed minister of Arbuthnot and Logy-Buchan; and in the following year, Mr Alexander Anderson being deprived, our author was made principal of the king's college at Aberdeen in his room. In the general assembly which met at Edinburgh in the years 1573 and 1577, he was chosen moderator; and to the end of his life was an active supporter of the reformed religion. He died in 1583, in the 45th year of his age; and was buried in the college church of Aberdeen. We are told in the Biographia, that he was eminent as a poet, a philosopher, a mathematician, a lawyer, a divine, and a physician. He wrote *Orationes de origine & dignitate juris*, printed at Edinburgh, 1572, 4to. His cotemporary Thomas Maitland wrote a copy of Latin verses on the publication of this book: they are printed in the *Delic. Poetar. Scot.* He published Buchanan's History of Scotland in the year 1582.

ARBUTHNOT (Dr John), was born in Kincardineshire, near Montrose, and was educated at Aberdeen, where he received his degree in physic. The difficulties in which his family was involved on account of their political principles making it necessary that he should court preferment in another country than his own, he went to London. The first character in which he acted there was a teacher of the mathematics; and while he was employed in this manner, he had occasion to publish his *Examination of Dr Woodward's Account of the Deluge*. This tract, which abounded with learning and good sense, served to make him known. He published soon after his *Essay on the usefulness of mathematics*. In the profession of physic he advanced by slow but sure degrees; and his reputation in it was at length fully established, by a successful cure which he performed on prince George of Denmark. Queen Anne, in consequence of it, appointed him one of her physicians in ordinary in 1709; and, some years before this, his extensive knowledge had procured his admission into the Royal Society. His talents and worth were the strongest recommendations of him to the men of wit and learning of his day; and he entered into particular connection with Pope and Swift, with whom he joined in publishing several volumes of miscellanies;

among which are the well-known *Memoirs of Martinus Scriblerus*, a satire of infinite humour on the abuses of human learning. In 1715, he assisted Pope and Gay in the *Three hours after marriage*; a dramatic performance, which was brought upon the stage without success. In 1727, he published *Tables of ancient coins, weights, and measures*; a work of great use, and real erudition. In 1732, his valuable tract concerning *The nature and choice of aliments* appeared; which, the year after, was followed by his remarks on *The effects of air on human bodies*. A constitutional asthma had distressed him at different periods of his life, and proved fatal to him in 1734.—Dr Arbuthnot appears to have been in all respects a most accomplished and amiable person. He has showed himself equal to any of his cotemporaries in wit and learning, and he was superior to most men in the moral duties of life, in acts of humanity and benevolence. His letter to Mr Pope, written as it were upon his death-bed, and which no one can read without the tenderest emotion, discovers such a noble fortitude of mind at the approach of his dissolution, as could be inspired only by a clear conscience, and the calm retrospect of an uninterrupted course of virtue. In 1751, came out, in two vol. 8vo. printed at Glasgow, *The miscellaneous works of the late Dr Arbuthnot*; which are said to comprehend, with what is inserted in Swift's Miscellanies, all the pieces of wit and humour of this admirable author.

ARBUTUS, the STRAWBERRY-TREE: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 18th order, *Bicornes*. The calyx is divided into five parts; the corolla is ovated; and the fruit is a berry with five cells.

Species. 1. The unedo, or common strawberry-tree, is a native of Italy, Spain, and also of Ireland; and is now very common in the British gardens. Of this species there are four varieties, viz. The oblong fruited, the round-fruited, the red-flowered, and the double-blossomed. One description is nearly common to them all; and their inconsiderable variation is almost sufficiently shown in their respective appellations.

The oblong-fruited sort will grow to be a middling-sized tree in some countries; for we read of the large uses its wood has been applied to; such as *Arbutæ crates*, &c. Arbutæan harrows, &c. With us it may be kept down to any size. The main stems are covered with a light-brown bark, rough, and falling. The younger branches are of a kind of purple colour, whilst the last year's shoots are of a fine red, and a little hairy. The leaves grow alternately on the branches, and are of an oblong oval figure. They stand on short foot-stalks, and the oldest leaves make a contrast with the younger by having their foot-stalk and mid-rib of a fine scarlet colour. They are smooth, and beautifully serrated. Their upper surface (as in most trees) is of a stronger green than their under; and the young twigs are garnished with them in plenty. These are beauties in common to most trees, in some degree or other; but every thing else almost of this tree that presents itself to consideration is singular: The time of its flowering will be in November and December; when it is rather singular to see a tree in the open ground in full blow; and the fruit ripens by that time twelvemonth after. The manner and nature of the fruit,

Arbutus.

Arbutus.

fruit, which look like very large red strawberries, give it also a singular and delightful look; and this is heightened as they appear all over the tree among the flowers; for that is the time of its being ripe, when the flowers for the succeeding crop are fully out. The flowers themselves make no great figure; they are of a kind of whitish-yellow colour; and are succeeded by the abovementioned strawberry-fruit, which will require a revolution of twelve months before they perfectly arrive at their maturity and colour. The flowers of the first sort are larger than those of the second; and the fruit is oval, and much larger than our common scarlet strawberry.

The round-fruited sort has its pitcher-shaped flowers, which are succeeded by round scarlet fruit, as wide as they are long; and this is all the difference between these sorts.

The red-flowered sort differs in no respect from the common sort, only the flowers are red, and these constitute a variety from the other sorts of flowers; but the contrast is not so great between their fruit and them as of the other sorts, their colour approaching too near to a sameness.

The double-blossomed sort differs in no respect, only that the flowers are double; but this difference is so inconsiderable, that it will not be seen without looking into the flower; and even then the doubleness will appear so trifling as scarcely to merit notice; so that a plant or two, to have it said that the collection is not without it, will be sufficient. Neither ought any more to be admitted; for they will not produce the same plenty of fruit, which constitutes the greatest beauty of these trees, as the single sorts.

The above sorts thrive best in a wet soil, and is seldom hurt by hard winters, though the young and tender branches are often destroyed by frost; but, however dead the trees may appear, they ought always to be suffered to remain till the following summer shows what are living and what are dead.

The method of propagating the varieties of the unedo is by layers and cuttings: the species itself may be raised from seed.—1. *Propagation by layers.* The operation must be performed on the youngest twigs; and in some soils they will strike root pretty freely, whilst in others they can hardly be made to grow at all: but before they have lain two summers, you may scarcely venture to look for any. When the roots are struck, the layers should be carefully taken off in the spring, and planted in separate pots: and after well watering them, they should be plunged up to the rims in an hotbed, and this will set them forward; for without this assistance many of the layers will be lost; since they are difficult plants to make grow. After the hotbed has forced the seeds into a state of vegetation, the pots may be taken out, and plunged up to the rims in some natural mould, to keep them cool and moist; and here they may stand for two or three years, or longer, if the pots are large enough, without ever removing or sheltering in winter; for they are hardy enough to resist our severest cold. When they are to be finally set out, all the mould may be turned out of the pots hanging to the roots; and having proper holes made ready, they may be planted in them, and the plant will be ignorant of its new situation.

Arbutus.

2. *By cuttings.* These must be planted in pots, and have the benefit of a good bark-bed; in which being constantly shaded and duly watered, many of them will grow. As the plants raised this way will be rather tender by being forced in the bark-bed, it will be necessary to remove them into the greenhouse, or to place them under a hotbed-frame during the first winter: and after that, the pots may be set up to the rims in the ground, and, like the layers, the plants may be turned out at a convenient time into the places where they are to remain.

3. *Raising from seeds.* Let these be taken from the oblong or round-fruited sort. The seeds, which will be ripe some time in November or the beginning of December, for they will not be ripe at the same time in all places, must be then gathered; and as they should not be sowed until the spring, it will be proper to put them into a pot or jar, mixing with them a quantity of drift-sand; and this will preserve them sound and good. The beginning of March is the best time for sowing the seeds; and the best soil for them is maiden earth, taken from a rich pasture at least a year before, with the sward; and this, by constant turning, being well rotted and mixed, will be ready to receive them. Having filled a different quantity of pots with this fine mould, let the seeds be sown, and but just covered, scarcely a quarter of an inch deep. A dry day should be chosen for the business; and no watering by the hand should be given them, as it will endanger the setting the mould hard in the pots. Leave them abroad until some rain falls, which at that time may be hourly expected; and after that, having an hotbed ready, plunge the pots therein. In less than six weeks you may expect your plants to appear; when much air should be afforded them, and frequent waterings, in small quantities, gently sprinkled over them. After this, they may be hardened to the air by degrees, and the pots set up to the rims in the natural mould, in a shady place. In October they should be removed into the greenhouse, or some shelter, in frosty weather: though they should always be set abroad in mild open weather. In the spring they may be shook out, and planted in separate pots; and they should have the advantage also of a hotbed to set them a-growing: their future management may be the same as was directed for the layers. When these trees are to be planted out, very little regard need be paid to the soil or situation; for they will grow almost any where, and resist our severest northern blasts. One thing, however, the gardener must constantly observe, in order to continue his trees in their beauty, viz. As often as a heavy snow falls, so constantly should he go and shake the boughs; for it will lodge amongst the leaves and branches in such great quantity as to weigh down and split the largest branches; the deformity of which afterwards may be easily conceived. Besides, many years must expire before the tree will, if ever it should, grow to its former beauty; to preserve this, therefore, makes the narrowly watching these trees in snowy weather highly necessary.

2. The andrachne will grow to a larger size than the arbutus. The leaves are smooth, and nearly of the same figure as the preceding sort; though they are larger, and have their edges undivided. The flowers grow like the other sorts; are of the same colour: and they

Arcade
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Arcanum.

they are succeeded by large, oval, scarlet fruit. It is called the *Oriental Strawberry tree*, because this sort grows plentifully in many parts of the East, and is useful to the inhabitants for many purposes in life.

The andrachne may be propagated in the same manner as the arbutus: But the plants must be preserved in pots for three or four years till they have obtained strength; and may be then planted in a warm situation and on a dry soil, for this species will not thrive on wet ground.

Besides the above, there are three other species of arbutus, viz. The *acadiensis*, a native of Acadia; the *alpina*, or mountain strawberry-tree, a native of Britain; and the *uva ursi*, a plant lately discovered in the Highlands of Scotland, and which formerly was thought not to be a native of Britain.

ARCADE, in architecture, is used to denote any opening in the wall of a building formed by an arch.

ARCADI, or ARCADIANs, the name of a learned society at Rome. See the article ACADEMY.

ARCADIA, an inland district in the heart of Peloponnesus (Strabo). It is mountainous, and fitter for pasture than corn; and therefore chiefly celebrated by bucolic or pastoral poets, who feign Pan, the god of shepherds, to be the guardian of it (Virgil). It has to the north Achaia, to the east Argos and Laconia, Messenia to the south, and Elis to the west. According to Pliny, the wine of this country cured barrenness in women, and inspired the men with rage; and the berries of the yew gathered there were so strong a poison, that whoever slept or took refreshment under that tree were sure to die. In Strabo's time there were few cities remaining in it, most of them being destroyed in the Grecian wars. Eustathius says, that the country was anciently called *Pelasgia*, from Pelasgos, who brought the people, from roots, herbs, and leaves of trees, to feed on acorns, especially beech-mast; as Artemidorus observes, that the Arcadians usually lived on acorns. It was also called *Lycaonia*, *Gigantis*, and *Parrhasia* (Stephanus). The Arcadians are greatly commended for their love of, and skill in, music (Virgil, Polybius). To imitate the Arcadians, is to labour and toil for the benefit of others, never conquering their own, but the enemies of others (Hesychius). This probably took its rise from the ancient Arcadians being accustomed to hire themselves out as mercenaries to foreign nations. Homer commends their martial prowess, their pastures, their sheep, and their country well-watered. The gentilitious name is *Arcades*; who boasted of their great antiquity, and that they were older than the sun and moon (Apollonius, Rhodius, Nonnius, Plutarch, Ovid, Statius). They were the first who had a year of three months, and therefore called *Proceleni*, because their year was prior to that adjusted in Greece to the course of the moon (Censorinus).

ARCANGIS, in the Turkish armies, an inferior kind of infantry, which serve as *enfants perdus*, and to harass and pillage the enemy's frontiers. The Arcangis are an order inferior to the Janisaries; and when any of them distinguish themselves, are usually preferred into the Janisaries order. They have no pay, but are to subsist on their plunder.

ARCANUM, among physicians, any remedy, the preparation of which is industriously concealed, in order to enhance its value.

ARCANUM (anc. geog.), a villa of Q. Cicero, Tully's brother, in Latium, (Cicero). Now Arce, in the Terra di Lavoro, in the kingdom of Naples, on the borders of the Campagna di Roma, on the river Melpis, between Arpinum and Aquinum.

ARCBOUTANT, in building, an arched buttress. See BUTTRESS.

ARCESILAUS, a celebrated Greek philosopher, about 300 years before the Christian æra, was born at Pitane, in Eolis. He founded the second academy, which is called the *second school*. He was a man of great erudition, and well versed in the writings of the ancients. He was remarkable for the severity of his criticisms; but nevertheless he knew how to accommodate himself to the age, and pursue the allurements of pleasure. He had a great number of disciples. His doctrines were different in several respects from those of the ancient school: and perhaps he was led into this diversity of opinions by many capital errors in the ancient school, such as the incredible arrogance of the dogmatists, who pretended to assign causes for all things: the mysterious air they had thrown upon the doctrine of ideas; the entirely discarding the testimony of the senses; the objections of the Pyrrhonists, who now began to broach their opinions; the powerful opposition of the Stoics and Peripatetics, who discovered the feeble parts of the academic philosophy. These might have given cause to reform the ancient school, and to found a new one. The middle school, therefore, laid it down as a principle, that we could know nothing, nor even assure ourselves of the certainty of this position; from whence they inferred, that we should affirm nothing, but always suspend our judgment. They advanced, that a philosopher was able to dispute upon every subject, and bring conviction with him, even upon contrary sides of the same question; for there are always reasons of equal force both in the affirmative and negative of every argument. According to this doctrine, neither our senses, nor even our reason, are to have any credit: and therefore, in common affairs, we are to conform ourselves to received opinions. Arcesilaus was succeeded by his disciple Lacydes.

ARCH, in geometry, any part of the circumference of a circle or curved line, lying from one point to another, by which the quantity of the whole circle or line, or some other thing sought after, may be gathered.

ARCH, a concave or hollowed piece of building, constructed in such a manner that the several stones of which it is composed keep one another in their places. The terms *arch* and *vault* properly differ only in this, that the arch expresses a narrower, and the vault a broader, piece of the same kind. The principal difference in the form of arches is, that some are circular, and others elliptical; the former having a larger or smaller part of a circle, the other of an ellipsis. What are called *strait arches*, are those frequently used over doors and windows, the upper and under edges of which are strait and parallel, and the ends and joints all pointing toward a centre. The space between two piers of a bridge is called an *arch*, because usually arched over.

Triumphal Arches are magnificent entries into cities, erected to adorn a triumph, and perpetuate the memory of the action. The arches of Titus and Constantine

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Arch.

Arch
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Archangel.

stantine make at this time a great figure among the ruins of old Rome.

ARCH, in composition, signifies *chief*, or of the *first* class; as archangel, archbishop, &c.

ARCHÆUS, or ARCHEUS. See ARCHEUS.

ARCHANGEL, an angel occupying the eighth rank in the celestial hierarchy. See ANGEL and HIERARCHY.

ARCHANGEL, a city of Russia, in the province of Dwina, situated on the east side of the river Dwina, about six miles from the White Sea, in E. Long. 40. 21. N. Lat. 64. 30. The city extends about three miles in length and one in breadth. It is rich, populous, built in the modern taste, and is a metropolitan see. It rose from a castle built on the spot by Basiliowitz II. to protect the increasing trade brought there by the discovery of the White Sea by the English, and took its name from a monastery built in honour of the archangel Michael. Before this period the commercial intercourse between Russia and the northern parts of Europe had been long carried on by the Hanseatic towns; which usually sailed to Revel or Narva, and from thence passed through Dorpt to Plescof and Novogorod, where their factories were established. The accidental discovery of Archangel, in 1553, deprived the Hanseatic towns of a great part of this lucrative commerce, and transferred it to the English. On the 11th of May, in the abovementioned year, three ships sailed from Depthford, in order to explore the northern seas, under the command of Sir Hugh Willoughby. Two of these vessels penetrated as high as the 72d degree of latitude, to the coast of Spitzbergen; and being afterwards forced by stress of weather into the bay of the river Arzina in Russian Lapland, both their crews were frozen to death. Richard Chancellor, who commanded the other ship, called the *Bonaventure*, discovering the country bordering upon the White Sea, landed near the mouth of the Dwina, in a bay, which he denominated the *Bay of St Nicholas*, from a convent of that name near the present port of Archangel. The czar Iwan Basilowitz, being informed of his arrival, invited him to his court, where he was hospitably entertained, and the czar indulged the English with a free trade in his dominions: in consequence of this permission, a company of merchants was incorporated in London; and being encouraged by particular privileges from the czar, set on foot a considerable commerce, to the mutual advantage of both nations. This traffic the English for some time enjoyed without competition. The Dutch, however, and other nations, gradually insinuated themselves into this commerce; which they carried on to a very great disadvantage, as not being favoured with those privileges which the czar had granted to the English company. These were at last suddenly annihilated by Alexis Michaelovitch; who in 1648 banished the English merchants from all his dominions. The cause of this expulsion is generally imputed to the resentment which the czar conceived against the English for the execution of Charles I. with whom he was closely connected by leagues of amity and alliance: but in effect he abolished the company's privileges in the year before that event; and his indignation against the English for their rebellion, Mr Coxe affirms, was only a political pretext; the real motive being derived from the offers made by the Dutch to

pay duties of export and import, to the amount of 15 *per cent.* if they were indulged with the liberty of carrying on as free a trade as the English throughout his dominions. For not long afterwards, the czar suffered William Prideaux, Cromwell's agent, to reside at Archangel; and permitted the English to renew their commerce in that port upon the same footing with other foreigners. And upon this footing alone our merchants ever after continued to trade.

The commodities chiefly imported into Archangel, were gold and silver stuffs and laces, gold wire, cochineal, indigo, and other drugs for dyeing; wine, brandy, and other distilled spirits. The customs arising to the czar were computed at 200,000 rubles a-year, and the number of foreign ships at 400 annually. But upon the building of Petersburg, Peter the Great abolished the immunities of Archangel, and removed the commerce of the White Sea to the havens of the Baltic. Still, however, its exports of tar were considerable; in 1730, to the amount of 40,000 lasts, of 11 barrels each. It sends, during winter, great quantities of the rawaga, a small species of three-finned cod, to Petersburg frozen.

In 1752 Elizabeth again restored the ancient immunities of Archangel; and its present trade is not inconsiderable. It supplies the government of Archangel, part of those of Nisnei-Novogorod and Casan, with European commodities; and draws in exchange from those parts corn, flax, hemp, coarse linen, cordage, sails, masts, and tallow, which are mostly conveyed by the Dwina: it forms also a principal communication with the northern and western parts of Siberia, from whence the merchants procure furs, skins, and iron.

The houses of Archangel are generally of wood, but well contrived; and every chamber is provided with a stove, as a fence against the cold, which is here excessive in the winter. The streets are paved with broken pieces of timber and rubbish, disposed so unskilfully that one cannot walk over it without running the risk of falling, except when the streets are rendered smooth and equal by the snow that falls and freezes in the winter. Notwithstanding the severity of the cold in this place, there is always plenty of good provisions; butcher's meat, poultry, wild fowl, and fish, in great variety, are sold surprisingly cheap.

The most remarkable edifice in Archangel is a large town-house, built of square stones in the Italian manner, and divided into three parts. One of these consists of large commodious apartments, for the accommodation of merchants, strangers as well as natives: here they are permitted to reside with their merchandize till the month of October, when all the foreign ships set sail for the respective countries to which they belong. Then the traders are obliged to remove their quarters from the town-house or palace, which hath a spacious court, that reaches down to the river.

ARCHBISHOP, the name of a church dignitary of the first class. Archbishops were not known in the east till about the year 320; and though there were some soon after this who had the title, yet that was only a personal honour, by which the bishops of considerable cities were distinguished. It was not till of late that archbishops became metropolitans, and had suffragans under them. Athanasius appears to be the first who used the title *Archbishop*, which he gave occasionally

Archangel,
Archbishop

Archbishop occasionally to his predecessor; Gregory Nazianzen, in like manner, gave it to Athanasius; not that either of them were intitled to any jurisdiction, or even any precedence in virtue of it. Among the Latins, Isidore Hispalensis is the first that speaks of archbishops. He distinguishes four orders or degrees in the ecclesiastical hierarchy, viz. patriarchs, archbishops, metropolitans, and bishops.

The archbishop, beside the inspection of the bishops and inferior clergy in the province over which he presides, exercises episcopal jurisdiction in his own diocese. He is guardian of the spiritualities of any vacant see in his province, as the king is of the temporalities; and exercises ecclesiastical jurisdiction in it. He is intitled to present by lapse to all the ecclesiastical livings in the disposal of his diocesan bishop, if not filled within six months. He has likewise a customary prerogative, upon consecrating a bishop, to name a clerk or chaplain to be provided for by such bishop; in lieu of which it is now usual to accept an option. He is said to be enthroned when vested in the archbishopric; whereas bishops are said to be installed.

The ecclesiastical government of England is divided into two provinces, viz. Canterbury and York. Canterbury hath the following suffragan bishoprics appertaining to it, St Asaph, Bangor, Bath and Wells, Bristol, Chichester, Litchfield and Coventry, St David's, Ely, Exeter, Gloucester, Hereford, Landaff, Lincoln, London, Norwich, Oxford, Peterborough, Rochester, Salisbury, Winchester, and Worcester. To York appertaineth the bishoprics of Carlisle, Chester, and Durham; to which may be added the bishopric of Sodor and Man, whose bishop is not a Lord of Parliament. See **CANTERBURY** and **YORK**.

The archbishop of Canterbury had anciently, viz. till the year 1152, jurisdiction over Ireland as well as England, and was styled a *patriarch*, and sometimes *alterius orbis papa*, and *orbis Britannici pontifex*. Matters were done and recorded in his name thus, *Anno pontificatus nostri primo*, &c. The first archbishop of Canterbury was Austin, appointed by king Ethelbert, on his conversion to Christianity, about the year 598. He was also *legatus natus*. He even enjoyed some special marks of royalty; as to be patron of a bishopric, which he was of Rochester; and to make knights, coin moneys, &c. He is still the first peer of England, and the next to the royal family; having precedence of all dukes and all great officers of the crown. It is his privilege, by custom, to crown the kings and queens of this kingdom. He may retain and qualify eight chaplains; whereas a duke is by statute allowed only six. He has, by common law, the power of probate of wills and testaments, and granting letters of administration. He has also a power to grant licences and dispensations in all cases formerly sued for in the court of Rome, and not repugnant to the law of God. He accordingly issues special licences to marry, to hold two livings, &c. and he exercises the right of conferring degrees. He also holds several courts of judicature; as, court of arches, court of audience, prerogative court, and court of peculiars.

The archbishop of York has the like rights in his province as the archbishop of Canterbury. He has precedence of all dukes not of the royal blood; and of all officers of state, except the lord high chancellor.

He has also the rights of a count palatine over Hexhamshire. The first archbishop of York was Paulinus, appointed by Pope Gregory about the year 622. He had formerly jurisdiction over all the bishops of Scotland; but in the year 1470, pope Sixtus IV. created the bishop of St Andrew's archbishop and metropolitan of all Scotland.

Scotland, whilst episcopacy prevailed in that country, had two *archbishops*, of St Andrew's and Glasgow; of which the former was accounted the metropolitan; and, even before it arrived at the dignity of an archbishopric, resisted with great spirit all the attempts of the archbishops of York in England to become the metropolitans of Scotland. The sees of Argyle, Galloway, and the isles, were suffragans to Glasgow; all the others in the kingdom to St Andrew's.

Ireland has four archbishops; of Armagh, Dublin, Cashel, and Tuam; of whom the former is primate of all Ireland.

ARCHBISHOPRIC, in ecclesiastical geography, a province subject to the jurisdiction of an archbishop.

ARCHBUTLER, one of the great officers of the German empire, who presents the cup to the emperor on solemn occasions. This office belongs to the king of Bohemia.

ARCHCHAMBERLAIN, an officer of the empire, much the same with the great chamberlain in England. The elector of Brandenburg was appointed by the golden bull archchamberlain of the empire.

ARCHCHANCELLOR, an high officer who, in ancient times, presided over the secretaries of the court. Under the two first races of the kings of France, when their territories were divided into Germany, Italy, and Arles, there were three archchancellors: and hence the three archchancellors still subsisting in Germany; the archbishop of Mentz being archchancellor of Germany, the archbishop of Cologne, and the archbishop of Treves.

ARCHCHANTOR, the president of the chantors of a church.

ARCHCOUNT, a title formerly given to the earl of Flanders, on account of his great power and riches.

ARCHDEACON, an ecclesiastical dignitary or officer next to a bishop, whose jurisdiction extends either over the whole diocese or only a part of it. He is usually appointed by the bishop himself; and hath a kind of episcopal authority, originally derived from the bishop, but now independent and distinct from his. He therefore visits the clergy; and has his separate court for punishment of offenders by spiritual censures, and for hearing all other causes of ecclesiastical cognizance. There are 60 archdeacons in England.

ARCHDEACON'S COURT, is the most inferior court in the whole ecclesiastical polity. It is held in the archdeacon's absence, before a judge appointed by himself, and called his *official*; and its jurisdiction is sometimes in concurrence with, sometimes in exclusion of, the bishop's court of the diocese. From hence, however, by statute 24 Hen. VIII. c. 12. there lies an appeal to that of the bishop.

ARCHDRUID, the chief or pontiff of the ancient druids of a nation. See **DRUID**.

ARCHDUKE, a title peculiar to the house of Austria; all the sons of which are archdukes, and daughters archduchesses. See **DUKE**.

ACHELAUS, a celebrated Greek philosopher, the

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Archelaus.

Archelaus the disciple of Anaxagoras, flourished about 440 years before Christ. He read lectures at Athens, and did not depart much from the opinions of his master. He taught that there was a double principle of all things, namely, the *expansion* and *condensation* of the air, which he regarded as infinite. Heat, according to him, was in continual motion. Cold was ever at rest. The earth, which was placed in the midst of the universe, had no motion. It originally resembled a wet marsh, but was afterwards dried up; and its figure, he said, resembled that of an egg. Animals were produced from the heat of the earth, and even men were formed in the same manner. All animals have a soul, which was born with them: but the capacities of which vary according to the structure of the organs of the body in which it resides.—Socrates, the most illustrious of his disciples, was his successor.

ARCHELAUS, the son of Herod the Great, was declared king of Judea the second year after the birth of Christ. He put to death 3000 persons before he went to Rome to be confirmed by Augustus. However, that emperor gave him half of what had been possessed by his father; but at length, on fresh complaints exhibited against him by the Jews, he banished him to Vienne in Gaul, A. D. 6. where he died.

ARCHELAUS, the son of Apollonius, one of the greatest sculptors of antiquity, was a native of Ionia, and is thought to have lived in the time of the emperor Claudius. He executed, in marble, the apotheosis of Homer. This masterpiece in sculpture was found in 1568, in a place named *Fratocchia*, belonging to the princes of Colonna, where, it is said, the emperor Claudius had a pleasure-house. Father Kircher, Cuper, Spanheim, and several other learned antiquaries, have given a description and explication of this work.

ARCHERS, a kind of militia or soldiery armed with bows and arrows. The word is formed of *arcus*, “a bow;” whence *arcuarius*, and even *arquis*, and *arquites*, as they are also denominated in the corrupt state of the Latin tongue.

Archers were much employed in former times: but they are now laid aside, excepting in Turkey and some of the eastern countries; where there are companies of archers still subsisting in their armies, and with which they did terrible execution at the battle of Lepanto.—As an exercise, the practice of archery is still kept up in many places. See the article **ARCHERY**.

In France, the officers who attend the lieutenants de police and provosts to make captures, seizures, arrests, &c. are called *archers*; though their arms be only halberds or carabines.—In this sense they say, the *archers* of the *grand prevot de l’hotel*; of the *prevot des marchands*; the city *archers*; the *archers du guet*, or of the watch, &c.—Small parties or *archers*, called also *gens de marchaussee*, are continually patrolling on the great roads, to secure them against robbers.—The carriages of Lyons, &c. are always escorted by a party of archers. To the diligence of these archers, or marshals-men, it is partly owing, that persons now travel in all parts of France in the utmost security; there being fewer robbers on the highway in that whole kingdom in a year than about London in a week.

ARCHERY, the art or exercise of shooting with a bow and arrow,

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In most nations, the bow was anciently the principal implement of war, and by the expertness of the archers alone was often decided the fate of battles and of empires.—In this island archery was greatly encouraged in former times, and many statutes were made for the regulation thereof; whence it was that the English archers in particular became the best in Europe, and procured them many signal victories.

The *Artillery Company* of London, though they have long disused the weapon, are the remains of the ancient fraternity of bowmen or archers. Artillery (*artillerie*) is a French term signifying *archery*; as the *king’s bowyer* is in that language styled *artillier du roy*: *Archaeologia*, vol. vii. And from that nation the English seem to have learnt at least the cross-bow archery. We therefore find that William the Conqueror had a considerable number of bowmen in his army at the battle of Hastings, when no mention is made of such troops on the side of Harold: And it is supposed that these Norman archers shot with the arbalest (or cross-bow), in which formerly the arrow was placed in a groove, being termed in French a *quadrel*, and in English a *bolt*.

Of the time when shooting with the long-bow first began among the English, at which exercise they afterwards became so expert, there appear no certain accounts. Their chroniclers do not mention the use of archery as expressly applied to the cross bow, or the long-bow, till the death of Richard I. who was killed by an arrow at the siege of Limoges in Guienne, which Hemmingford mentions to have issued from a cross-bow.—After this, which happened in 1199, there appear not upon record any notices of archery for nearly 150 years, when an order was issued by Edward III. in the 15th year of his reign, to the sherives of most of the English counties for providing 500 white bows and 500 bundles of arrows, for the then intended war against France. Similar orders are repeated in the following years; with this difference only, that the sheriff of Gloucestershire is directed to furnish 500 painted bows as well as the same number of white. The famous battle of Cressy was fought four years afterwards, in which our chroniclers state that we had 2000 archers, who were opposed to about the same number of the French, together with a circumstance which seems to prove, that by this time we used the long-bow, whilst the French archers shot with the arbalest. The circumstance alluded to is as follows: Previously to the engagement there fell a very heavy rain, which is said to have much damaged the bows of the French, or perhaps rather the strings of them. Now the long-bow (when unstrung) may be most conveniently covered, so as to prevent the rain’s injuring it; nor is there scarcely any addition to the weight from such a case; whereas, the arbalest is of a most inconvenient form to be sheltered from the weather. As therefore, in the year 1342, orders issued to the sherives of each county to provide 500 bows, with a proper proportion of arrows, it seems probable that these were long-bows, and not the arbalest.

At the above-mentioned battle, the English ascribed their victory chiefly to the archers.—The battle of Poitiers was fought A. D. 1356, and gained by the same means.

Sometimes the archers gained great victories without even the least assistance from the men-at-arms; as

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Archery.

Archery. particularly, the decisive victory over the Scots at Homildon, A. D. 1402. In that bloody battle, the men-at-arms did not strike a stroke, but were mere spectators of the valour and victory of the archers. The Earl of Douglas, who commanded the Scotch army in that action, enraged to see his men falling thick around him by showers of arrows, and trusting to the goodness of his armour (which had been three years in making), accompanied by about eighty lords, knights, and gentlemen, in complete armour, rushed forward, and attacked the English archers sword in hand. But he soon had reason to repent his rashness. The English arrows were so sharp and strong, and discharged with so much force, that no armour could repell them. The Earl of Douglas, after receiving five wounds, was made prisoner; and all his brave companions were either killed or taken. Philip de Comines acknowledges, what our own writers assert, that the English archers excelled those of every other nation; and Sir John Fortescue says again and again,—"that the might of the realme of England standyth upon archers." The superior dexterity of their archers gave the English a great advantage over their capital enemies the French and Scots. The French depended chiefly on their men-at-arms, and the Scots on their pikemen; but the ranks of both were often thinned and thrown into disorder by flights of arrows before they could reach their enemies.

Henry's
Hist. vol. v.
p. 463.

James I. of Scotland, who had seen and admired the dexterity of the English archers, and who was himself an excellent archer, endeavoured to revive the exercise of archery among his own subjects, by whom it had been too much neglected. With this view, he ridiculed their awkward manner of handling their bows, in his humorous poem of Christ's Kirk on the Green; and procured the following law to be made in his first parliament, A. D. 1424, immediately after his return to Scotland; "That all men might busk thame to be archares fra the be 12 years of age; and that at ilk ten pounds worth of land thair be made bow markes, and specialle near parochie kirks, quhairn upon halie dayis men may cum, and at the leist schute thryse about, and have usage of archarie: and wha sa uses not archarie, the laird of the land sall rais of him a wedder; and giff the laird raisis not the said pane, the king's shiref or his ministers sall raise it to the king." But the untimely death of that excellent prince prevented the effectual execution of this law.

There is not found any act of Parliament of Henry V. in relation to archery, and all the orders in Rymer till the battle of Agincourt relate to great guns, from which he seems at first to have expected more considerable advantage than from the training of bowmen. It should seem, however, that this sort of artillery, from its unwieldiness, bad and narrow roads, together with other defects, was as yet but of little use in military operations. In the year 1417 this king therefore ascribes his victory at Agincourt to the archers, and directs the sherives of many counties to pluck from every goose six wing-feathers for the purpose of improving arrows, which are to be paid for by the king.

Archeologia.

In 1421, though the French had been defeated both at Cressy, Poitiers, and Agincourt, by the English

Archery. archers, yet they still continued the use of the cross-bow; for which reason, Henry V. as duke of Normandy, confirms the charters and privileges of the *ballistarii*, which had been long established as a fraternity in his city of Rouen.

In the fifth year of Edward IV. an act passed, that every Englishman, and Irishman dwelling with Englishmen, shall have an English bow of his own height, which is directed to be made of yew, wych, hazel, ash, or awburne, or any other reasonable tree according to their power. The next chapter also directs that butts shall be made in every township, which the inhabitants are obliged to shoot up and down every feast-day, under the penalty of a halfpenny when they shall omit this exercise.

In the 14th year, however, of this same king, it appears by Rymer's *Fœdera*, that 1000 archers were to be sent to the duke of Burgundy, whose pay is settled at sixpence a-day, which is more than a common soldier receives clear in the present times, when provisions are so much dearer, and the value of money so much decreased. This circumstance seems to prove, very strongly, the great estimation in which archers were still held. In the same year, Edward, preparing for a war with France, directs the sherives to procure bows and arrows, "as most specially requisite and necessary."

On the war taking place with Scotland, eight years after this, Edward provides both ordnance and archers; so that though the use of *artillery* (as we now term it) was then gaining ground, yet that of the bow and arrow was not neglected.

Richard III. by his attention to archery, was able to send 1000 bowmen to the duke of Bretagne, and he availed himself of the same troops at the battle of Bosworth.

During the reign of Henry VII. however, there appears no order relative to gunpowder or artillery: whilst, on the other hand, in 1488, he directs a large levy of archers to be sent to Brittany, and that they shall be reviewed before they embark. In the 19th year of his reign, this same king forbids the use of the cross-bow, because "the long-bow had been much used in this realm, whereby honour and victory had been gotten against outward enemies, the realm greatly defended, and much more the dread of all Christian princes by reason of the same."

During the reign of Henry VIII. several statutes were made for the promotion of archery. The 8th Eliz. c. 10. regulates the price of bows, and the 13th Eliz. c. 14. enacts, that bow-staves shall be brought into the realm from the Hanse-towns and the Eastward; so that archery still continued to be an object of attention in the legislature.

In Rymer's *Fœdera* there is neither statute nor proclamation of James I. on this head; but it appears by Dr Birch's Life of his son (prince Henry), that at eight years of age he learned to shoot both with the bow and gun, whilst at the same time this prince had in his establishment an officer who was styled *bow-bearer*. The king granted a second charter to the artillery company, by which the powers they had received from Henry VIII. were considerably extended.

Charles I. appears, from the dedication of a treatise

Archery. tise intitled *The Bowman's Glory*, to have been himself an archer: and in the eighth year of his reign he issued a commission to the chancellor, lord-mayor, and several of the privy-council, to prevent the fields near London being so inclosed as "to interrupt the necessary and profitable exercise of shooting," as also to lower the mounds where they prevented the view from one mark to another.

Catharine of Portugal (queen to Charles II.) seems to have been much pleased with the sight at least of this exercise; for in 1676, by the contributions of Sir Edward Hungerford and others, a silver badge for the marshal of the fraternity was made, weighing 25 ounces, and representing an archer drawing the long-bow (in the proper manner) to his ear, with the following inscription: *Regina Catharina Sagittarii*. The supporters are two bowmen, with the arms of England and Portugal. In 1682 there was a most magnificent cavalcade and entertainment given by the Finsbury archers, when they bestowed the titles of "duke of Shore-ditch," "marquis of Islington," &c. upon the most deserving. Charles II. was present upon this occasion; but the day being rainy, he was obliged soon to leave the field.

So lately as the year 1753 targets were erected in the Finsbury fields, during the Easter and Whitsun holidays; when the best shooter was styled Captain for the ensuing year, and the second Lieutenant.

Why this military weapon was so decisive in the battles of former days, the following reasons may be suggested.

Before the introduction of fire-arms, the enemy could only be struck at a distance by slings, the bow used by the ancients, or the cross-bow; to all which the English long-bow was infinitely superior. As for slings, they never have been used in the more northern parts of Europe by armies in the field; nor does their use indeed seem to have been at all convenient or extensively practicable, for two principal reasons: In the first place, slingers cannot advance in a compact body, on account of the space to be occupied by this weapon in its rotatory motion; in the next place, the weight of the stones to be carried must necessarily impede the slingers greatly in their movements. The bow of the ancients, again, as represented in all their reliefs, was a mere toy compared with that of our ancestors; it was therefore chiefly used by the Parthians, whose attacks (like those of the present Arabs) were desultory. As for the cross-bow, it is of a most inconvenient form for carriage, even with the modern improvements; and, in case of rain, could not be easily secured from the weather. After the first shot, moreover, it could not be recharged under a considerable time, whilst the bolts were also heavy and cumbersome. The English long-bow, on the other hand, together with the quiver of arrows, was easily carried by the archer, as easily secured from rain, and recharged almost instantaneously. It is not therefore extraordinary, that troops, who solely used this most effectual weapon, should generally obtain the victory, even when opposed to much more numerous armies.

It may be urged, that these losses having been experienced by our enemies, must have induced them to practise the same mode of warfare.—But it is

thought that the long-bow was not commonly used even in England till the time of Edward III. when the victory at Cressly sufficiently proclaimed the superiority of that weapon. It required, however, so much training before the archer could be expert, that we must not be surprised if soon afterwards this military exercise was much neglected, as appears by the preambles of several ancient statutes. Whilst the military tenures subsisted, the sovereign could only call upon his tenants during war, who therefore attended with the weapons they had been used to, and which required no previous practice. On the other hand, the English archers were obliged by acts of parliament, even in time of peace, to erect butts in every parish, and to shoot on every Sunday and holiday, after repairing perhaps to these butts from a considerable distance, whilst the expence of at least a yew-bow is represented as being a charge which they were scarcely equal to. The king and parliaments of this country having thus compelled the inhabitants to such training, the English armies had (it should seem) the same advantage over their enemies as the exclusive use of fire-arms would give us at present.

It appears also by what hath been already stated, that the long-bow continued to be in estimation for more than two centuries after gunpowder was introduced, which probably arose from muskets being very cumbersome and unwieldy. It is well known that rapid movements are generally decisive of the campaign: and for such the archers were particularly adapted, because, as they could not be annoyed at the same distance by the weapons of the enemy, they had scarcely any occasion for armour. The flower of ancient armies likewise was the cavalry, against which the long-bow never failed to prevail, as man and horse were too large objects to be missed: and hence the great number of French nobility who were prisoners at Cressly, Poitiers, and Agincourt; for being dismounted (if not wounded) whilst they were also clad in heavy armour, they could not make their escape. The same reason accounts for the English obtaining these signal victories with so inferior numbers; for the nobility and gentry thus becoming prisoners, the other parts of the French army made little or no resistance. No wonder, therefore, that in England the greatest anxiety was shown to promote the exercise of this most important weapon, and that so many statutes were made for that purpose.

In Scotland, also, little less attention, though apparently not with equal success, was shown to the encouragement of the art. In both kingdoms, it was provided, that the importers of merchandise should be obliged, along with their articles of commerce, to import a certain proportion of bows, bow-staves, and shafts for arrows. In both, every person was enjoined to hold himself provided in bows and arrows, and was prescribed the frequent use of archery. In both, a restraint was imposed upon the exercise of other games and sports, lest they should interfere with the use of the bow; for it was intended, that people should be made expert in the use of it as a military weapon, by habituating them to the familiar exercise of it as an instrument of amusement. As there was no material difference between the activity and bodily strength of

Archery. the two people, it might be supposed that the English and Scots wielded the bow with no unequal vigour and dexterity: but from undoubted historical monuments it appears that the former had the superiority; of which one instance has been already narrated. By the regulations prescribed in their statute-book for the practice of archery, we find that the English shot a very long bow, those who were arrived at their full growth and maturity being prohibited from shooting at any mark that was not distant upwards of 220 yards.

In the use of the bow, great dexterity as well as strength seems to have been requisite. Though we hear of arrows at Cheviot Chace which were a yard long, yet it is by no means to be supposed that the whole band made use of such, or could draw them to the head. The regulation of the Irish statute of Edward IV. viz. that the bow shall not exceed the height of the man, is allowed by archers to have been well considered; and as the arrow should be half the length of the bow, this would give an arrow of a yard in length to those only who were six feet high. A strong man of this size in the present times cannot easily draw above 27 inches, if the bow is of a proper strength to do execution at a considerable distance. At the same time it must be admitted, that as our ancestors were obliged by some of the old statutes to begin shooting with the long-bow at the age of seven, they might have acquired a greater slight in this exercise than their descendants, though the latter should be allowed to be of equal strength.

As the shooting with the long-bow was first introduced in England, and practised almost exclusively for nearly two centuries, so it hath occasioned a peculiar method of drawing the arrow to the ear and not to the breast. That this is contrary to the usage of the ancients is very clear from their reliefs, and from the tradition of the Amazons cutting off one of their paps as it occasioned an impediment to their shooting. The Finsbury archer is therefore represented in this attitude of drawing to the ear, both in the *Bowman's Glory*, and in the silver badge given by Catharine to the Artillery Company. Not many years ago there was a man named Topham, who exhibited surprising feats of strength, and who happened to be at a public-house near Islington, to which the Finsbury archers resorted after their exercise. Topham considered the long-bow as a play-thing, only fit for a child; upon which one of the archers laid him a bowl of punch, that he could not draw the arrow two-thirds of its length. Topham accepted this bet with the greatest confidence of winning: but bringing the arrow to his breast instead of his ear, he was greatly mortified by paying the wager after many fruitless efforts.

As to the distance to which an arrow can be shot from a long-bow with the best elevation of forty-five degrees, that must necessarily depend much both upon the strength and slight of the archer; but in general the distance was reckoned from eleven to twelve score yards. The butts for exercise, as above-noticed, were directed to be distant upwards of 220 yards. There is indeed a tradition, that an attorney of Wigan in Lancashire (named Leigh) shot a mile in three flights; but the same tradition states, that he placed himself in

Archery. a very particular attitude, which cannot be used commonly in this exercise. According to Neade, an archer might shoot six arrows in the time of charging and discharging one musket.

The archers consider an arrow of from 20 to 24 drop weight to be the best for flight or hitting a mark at a considerable distance, and that yew is the best material of which they can be made. As to the feathers, that of a goose is preferred; it is also wished, that the bird should be two or three years old, and that the feather may drop of itself. Two out of three feathers in an arrow are commonly white, being plucked from the gander; but the third is generally brown or grey, being taken from the goose; and, from this difference in point of colour, informs the archer when the arrow is properly placed. From this most distinguished part therefore the whole arrow sometimes receives its name: And this, by the by, affords an explanation of the grey goose wing in the ballad of Cheviot Chace. Arrows were armed anciently with flint or metal heads, latterly with heads of iron; of these there were various forms and denominations. By an act of parliament made the 7th of Henry IV. it was enacted, that for the future all the heads for arrows and quarrels should be well boiled or braised, and hardened at the points with steel; and that every arrow-head or quarrel should have the mark of the maker: workmen disobeying this order, were to be fined and imprisoned at the king's will, and the arrow-heads or quarrels to be forfeited to the crown.

Arrows were reckoned by sheaves, a sheaf consisting of 24 arrows. They were carried in a quiver, called also an *arrow-case*, which served for the magazine; arrows for immediate use were worn in the girdle. In ancient times phials of quicklime, or other combustible matter, for burning houses or ships, was fixed on the heads of arrows, and shot from long bows. This has been also practised since the use of gunpowder. Neade says, he has known by experience, that an archer may shoot an ounce of fire-work upon an arrow 12 score yards. Arrows with wild-fire, and arrows for fire-works, are mentioned among the stores at Newhaven and Berwick, in the 1st of Edward VI.

The force with which an arrow strikes an object at a moderate distance, may be conceived from the account given by king Edward VI. in his journal; wherein he says, that 100 archers of his guard shot before him two arrows each, and afterwards all together; and that they shot at an inch board, which some pierced quite thro' and struck into the other board; divers pierced it quite thro' with the heads of their arrows, the boards being well seasoned timber: their distance from the mark is not mentioned.

To protect our archers from the attacks of the enemy's horse, they carried long stakes pointed at both ends: these they planted in the earth, sloping before them. In the 1st of Edward VI. 350 of these were in the stores of the town of Berwick, under the article of archer's stakes; there were also at the same time eight bundles of archer's stakes in Pontefract castle.

To prevent the bow-string from striking the left arm, the arm is covered with a piece of smooth leather, fastened

Archery.

*Große on
Ancient
Armour.*

Archery. fastened on the outside of the arm; this is called a *bracer*; and to guard the fingers from being cut by the bow-string, archers wore shooting gloves. Chaucer in his prologue to the *Canterbury Tales*, thus describes an archer of his day:

And he was clade in cote and hode of grene,
A shefe of peacock arwes bright and keen,
Under his belt he bare full thriftily:
Wel coude he dresse his takel yewmanly,
His arwes drouped not with fetheres lowe,
And in his hand he bare a mighty bowe,
A not-hed hedde he, with broune visage,
Of wood crafte coude he wel all the usage:
Upon his arms he had a gai bracer,
And by his side a swerd and a bokeler,
And on the other side a gaie daggere
Harneised wel, and sharp as pointe of spere:
A cristofre on his breast of silver shene,
An horn he bare, the baudrik was of grene,
A forester was he sothely as I gesse.

Though archery continued to be encouraged by the king and legislature for more than two centuries after the first knowledge of the effects of gunpowder, yet by the latter end of the reign of Henry VIII. it seems to have been partly considered as a pastime. Arthur, the elder brother of Henry, is said to have been fond of this exercise, in so much that a good shooter was styled Prince Arthur. We are also informed, that he pitched his tent at Mile End in order to be present at this recreation, and that Henry his brother also attended. When the latter afterwards became king, he gave a prize at Windsor to those who should excel in this exercise; and a capital shot having been made, Henry said to Barlow (one of his guards), "If you still win, you shall be duke over all archers." Barlow therefore having succeeded, and living in Shoreditch, was created duke thereof. Upon another occasion, Henry and the queen were met by 200 archers on Shooter's hill, which probably took its name from their assembling near it to shoot at marks. This king likewise gave the first charter to the Artillery Company in the 29th year of his reign, by which they are permitted to wear dresses of any colour except purple and scarlet, to shoot not only at marks but birds, if not pheasants or herons, and within two miles of the royal palaces. They are also enjoined by the same charter not to wear furs of a greater price than those of the martin. The most material privilege, however, is, that of indemnification from murder, if any person passing between the shooter and the mark is killed, provided the archers have first called out *fast*.

The following description of an archer, his bow and accoutrements, is given in a MS. written in the time of Queen Elizabeth. "Captains and officers should be skilful of that most noble weapon, and to see that their soldiers according to their draught and strength have good bowes, well nocked, well strynged, everie stryng whippe in their nocke, and in the myddes rubbed with wax, brafer and shuting glove, some spare strynges trymmed as aforesaid, every man one shefe of arrows, with a case of leather defensible against the rayne, and in the same fower and twentie arrowes, whereof

Archery. eight of them should be lighter than the residue, to gall or astoyne the enemye with the hailshot of light arrows, before they shall come within the danger of their harquebuss shot. Let every man have a brigandine, or a little cote of plate, a skull or hufkyn, a mawle of leade of five foot in length, and a pike, and the same hanging by his girdle, with a hook and a dagger; being thus furnished, teach them by masters to march, shoote, and retire, keepinge their faces upon the enemy's. Sumtyme put them into great nowmbers, as to battell apparteyneth, and thus use them often times practised, till they be perfecte: ffor those men in battell ne skirmish can not be spared. None other weapon maye compare with the same noble weapon."

The long-bow, as already observed, maintained its place in our armies long after the invention of fire-arms. Nor have there been wanting experienced soldiers who were advocates for its continuance, and who in many cases even preferred it to the harquebuss or musket. King Charles I. twice granted special commissions under the great seal for enforcing the use of the long-bow. The first was in the 4th year of his reign: but this was revoked by proclamation four years afterwards, on account of divers extortions and abuses committed under sanction thereof. The second, anno 1633, in the 9th year of his reign, to William Neade and his son, also named William, wherein the former is styled an ancient archer, who had presented to the king a warlike invention for uniting the use of the pike and bow, seen and approved by him and his council of war: wherefore his Majesty had granted them a commission to teach and exercise his loving subjects in the said invention, which he particularly recommended the chief officers of his trained bands to learn and practise; and the justices and other chief magistrates throughout England, are therein enjoined to use every means in their power to assist Neade, his son, and all persons authorised by them in the furtherance, propagation, and practice of this useful invention. Both the commissions and proclamation are printed at large in Rymer. At the breaking out of the civil war, the Earl of Essex issued a precept, dated in November 1643, for stirring up all well-affected people by benevolence, towards the raising a company of archers for the service of the king and parliament.

Archery with the long-bow continues to be used as a manly exercise by the inhabitants of Geneva, and in many parts of Flanders; nor is it totally neglected in Great Britain. There are several societies of archers in England; the chief of which are, the *Woodmen of Arden*, and the *Toxophilite*. But the most noted society of this kind, now existing, is

The *Royal Company of Archers* in Scotland.—The ancient records of this Company having been destroyed by fire about the beginning of the present century, no authentic traces of their institution now remain. It is said that they owe their origin to the commissioners appointed in the reign of James I. of Scotland for enforcing and overseeing the exercise of archery in different counties. Those commissioners, who were in general men of rank and power, picking out amongst the better sort of people under their cognisance the most expert archers, formed them into a company, and upon pe-
rilous

Archery. rilous occasions made a present of their services to the king as his chief body-guards; in which situation they often distinguished themselves for their loyalty, their courage, and skill in archery. This rank of the king's principal body-guards the Royal Company still claim within seven miles of the metropolis of Scotland.

Certain it is, that by an act of the privy-council of Scotland in the 1677, this Company was recognised under the name and title of "His Majesty's Company of Archers:" and by the same act a piece of plate of the value of L. 20 Sterling was ordered to be given to be shot for by them at their annual parades called *WEAPON shavings*, and to be called *The King's Prize*.

At this period the Royal Company consisted, as it does at present, of the principal nobility and gentry of Scotland. But their unfortunate attachment to anti-revolution principles, upon that event's taking place, put almost a period to their existence: Their public parades or marches were discontinued, and the royal prize was with-held.

Upon the accession of Queen Anne, their former splendor was revived: and in the year 1703 they obtained a royal charter, confirming in general terms all their former rights and privileges, and conferring others upon them. But their partiality to the family of Stuart was at various after periods the cause of a temporary prosperity and decline.

These unhappy differences of opinion having totally subsided, the Royal Company are now more numerous and flourishing than ever, and perhaps even more dexterous archers. His present Majesty, as a mark of his royal patronage and approbation, has been pleased to revive the royal prize, which for the first time was shot for upon the 28th of July 1788 by a numerous and respectable meeting.

The Woodmen of Arden and the Toxophilite have lately been pleased to admit the members of the Royal Company to the freedom of their societies: these grants have been followed by reciprocal diplomas from the Royal Company; so that the three chief societies of archers in Britain may be said to be now incorporated into one.

The prizes belonging to this Company, and which are annually shot for, are, 1. A silver arrow, given by the town of Musselburgh, which appears to have been shot for as early as the year 1603. The victor in this as in the other prizes except the king's prize, has the custody of it for a year, then returns it with a medal appended, on which are engraved any motto and device which the gainer's fancy dictates. 2. A silver arrow given by the town of Peebles, A. D. 1626. 3. A silver arrow given by the city of Edinburgh, A. D. 1709. 4. A silver punch-bowl of about the value of L. 50, made of Scottish silver at the expence of the Company, A. D. 1720. And, 5. The king's prize above mentioned, which becomes the absolute property of the winner. All these prizes are shot for at what is termed *rovers*, the marks being placed at the distance of 185 yards.

Besides these, there is another prize annually contended for at butt or point-blank distance, called the *Goose*. The ancient manner of shooting for this prize was, a living goose was built in a turf-butt, having

the head only exposed to view; and the archer who first hit the goose's head was intitled to the goose as his reward. But this custom, on account of its barbarity, has been long ago laid aside; and in place of the goose-head, a mark of about an inch diameter is affixed upon each butt, and the archer who first hits this mark is captain of the butt-shooters for a year.

The affairs of the Company are managed by a preses and six counsellors who are chosen annually by the whole members. The council are vested with the power of receiving or rejecting candidates for admission, and of appointing the Company's officers civil and military.

The Royal Company now consists of above 1000 members, among whom are most of the Scottish nobility of the first distinction. A number of the Company meet weekly during the summer season in Edinburgh, in the Meadows, where they exercise themselves in shooting at butts or rovers: And in the adjoining ground they have a handsome building, erected within these 12 years, with suitable offices, whither they adjourn after their exercise, and where they hold their elections and other meetings relative to the business of the society.

The uniform of the Royal Company of Archers is tartan lined with white, and trimmed with green and white fringes; a white sash, with green tassels; and a blue bonnet, with a St Andrew's cross and feathers. The Company have two standards. The first of these bears on one side Mars and Cupid encircled in a wreath of thistles; with this motto, "*In peace and war.*" On the other, a yew tree, with two men dressed and equipped as archers, encircled as the former; motto, *Dat Gloria vires*. The other standard displays, on one side, a lion rampant gules, on a field or, encircled with a wreath; on the top, a thistle and crown; motto, *Nemo me impune lacesset*. On the other, St Andrew on the cross on a field argent; at the top a crown; motto, *Dulce pro patria periculum*.

ARCHES-COURT, in English ecclesiastical polity, is a court of appeal, belonging to the archbishop of each province; whereof the judge is called the *dean of the arches*, because he anciently held his court in the church of St Mary le bow (*Sancta Maria de arcubus*), though all the principal spiritual courts are now holden at Doctors Commons. His proper jurisdiction is only over the 13 peculiar parishes belonging to the archbishop of London, but the office of dean of the arches having been for a long time united with that of the archbishop's principal office, he now, in right of the last-mentioned office, receives and determines appeals from the sentences of all inferior ecclesiastical courts within the province. And from him there lies an appeal to the king in chancery (that is, to a court of delegates appointed under the king's great seal), by statute 25th Hen. VIII. c. 19. as supreme head of the English church, in the place of the bishop of Rome, who formerly exercised this jurisdiction; which circumstance alone will furnish the reason why the Popish clergy were so anxious to separate the spiritual court from the temporal.

ARCHETYPE, the first model of a work, which is copied after to make another like it.—Among minters, it is used for the standard weight by which the others

Archery.

Archeus
||
Archil

thers are adjusted.—The archetypal world, among Platonists, means the world as it existed in the idea of God before the visible creation.

ARCHEUS, (from *αρχη*, the principal, chief, or first mover); a sort of primum mobile set up by Helmont, to superintend the animal œconomy, and preserve it. It is akin to Plato's *anima mundi*.—Hippocrates uses the words *αρχηνη φυσικη*, to signify the former healthy state before the attack of the disease.

ARCHIACOLYTHUS (from *αρχος*, chief, and *ακολυθος*, minister), an ancient dignity in cathedral churches: the ministers whereof were divided into four orders or degrees, viz. priests, deacons, subdeacons, and acolythi; each of which had their chiefs. The chief of the acolythi was called *archiacolythus*.

ARCHIATER, ARCHIATRUS, properly denotes chief physician of a prince who retains several. The word is formed of *αρχη*, principium, "chief;" and *ιατρος*, medicus, a "physician."

ARCHIDAPIFER, (from *αρχος*, and *δαπifer*, "sewer,") or chief sewer, is a great officer of the empire. The elector of Bavaria is archidapifer. The palatine of the Rhine at one time pretended this office was annexed to his palatinate; but he has since desisted.

ARCHIEROSYNES, in the Grecian antiquity, a high priest vested with authority over the rest of the priests, and appointed to execute the more sacred and mysterious rites of religion.

ARCHIGALLUS, in antiquity, the high-priest of Cybele, or the chief of the eunuch-priests of that goddess, called *Galli*.

ARCHIGERONTES (from *αρχος*, and *γερον* old), in antiquity, the chiefs or masters of the several companies of artificers at Alexandria. Some have mistaken the archigerontes for the arch-priests appointed to take the confessions of those who were condemned to the mines.

ARCHIGUBERNUS, ARCHIGUBERNETA, or ARCHIGUBERNITES, in antiquity, the commander of the imperial ship, or that which the emperor was aboard of. Some have confounded the office of archigubernus with that of *praefectus classis*, or admiral, but the former was under the command of the latter. Potter takes the proper office of the archiguberneta to have been, to manage the marine affairs, to provide commodious harbours, and order all things relating to the sailing of the fleet, except what related to war.

ARCHIL, ARCHILLA, ROCELLA, ORSIELLE, is a whitish moss which grows upon rocks, in the Canary and Cape Verd islands, and yields a rich purple tincture, fugitive indeed, but extremely beautiful. This weed is imported to us as it is gathered. Those who prepare it for the use of the dyer, grind it betwixt stones, so as to thoroughly bruise, but not to reduce it into powder; and then moisten it occasionally with a strong spirit of urine, or urine itself mixed with quicklime: in a few days it acquires a purplish red, and at length a blue colour. In the first state it is called *Archil*; in the latter, *Lacmus* or *Litmase*.

The dyers rarely employ this drug by itself, on account of its dearth and the perishableness of its beauty. The chief use they make of it is, for giving a bloom to other colours, as pinks, &c. This is effected

by passing the dyed cloth or silk through hot water lightly impregnated with the archil. The bloom thus communicated soon decays upon exposure to the air. Mr Hellot informs us, that by the addition of a little solution of tin, this drug gives a durable dye: that its colour is at the same time changed towards a scarlet; and that it is the more permanent in proportion as it recedes the more from its natural colour.

Prepared archil very readily gives out its colour to water, to volatile spirits, and to spirit of wine; it is the substance principally made use of for colouring the spirits of thermometers. As exposure to the air destroys its colour upon cloth, the exclusion of the air produces a like effect in these hermetically sealed tubes, the spirits of large thermometers becoming in the compass of a few years colourless. M. l'Abbe Nollet observes (in the French memoirs for the year 1742), that the colourless spirit, upon breaking the tube, soon resumes its colour, and this for a number of times successively; that a watery tincture of archil, included in the tubes or thermometers, lost its colour in three days; and that in an open deep vessel, it became colourless at the bottom, while the upper part retained its colour. See *COLOUR-Making*, n° 38.

A solution of archil in water, applied on cold marble, stains it of a beautiful violet, or purplish blue colour, far more durable than the colour which it communicates to other bodies. Mr Du Fay says he has seen pieces of marble stained with it, which in two years had suffered no sensible change. It sinks deep into the marble, sometimes above an inch; and at the same time spreads upon the surface, unless the edges be bounded by wax or other like substances. It seems to make the marble somewhat more brittle.

Linnæus informs us, in the Swedish Transactions for the year 1742, that the true archil moss is to be found on the western coasts of England. It has been for a considerable time past prepared by Messrs Gordons at Leith, from a species found in the Highlands of Scotland.

ARCHILOCHIAN, a term in poetry, applied to a sort of verses, of which Archilochus was the inventor, consisting of seven feet; the four first whereof are ordinarily dactyles, though sometimes spondees; the three last trochees, as in Horace,

Solvitur acris hyems, grata vice veris & Favoni.

ARCHILOCHUS, a famous Greek poet and musician, was, according to Herodotus, cotemporary with Candaules and Gyges, kings of Lydia, who flourished about the 14th Olympiad, 724 years before Christ. But he is placed much later by modern chronologists; viz. by Blair 686, and by Priestley 660 years, before Christ.

He was born at Paros, one of the Cyclades. His father Teleicles was of so high a rank, that he was chosen by his countrymen to consult the oracle at Delphos concerning the sending a colony to Thasos: a proof that he was of one of the most distinguished families upon the island. However, he is said to have sullied his birth by an ignoble marriage with a slave called *Enipo*, of which alliance our poet-musician was the fruit.

Though Archilochus showed an early genius and attachment to poetry and music, these arts did not pre-

Archil
||
Archilochus

Archilochus.

vent his going into the army, like other young men of his birth; but in the first engagement at which he was present, the young poet, like Horace, and like our own Suckling, lost his buckler, though he saved his life by the help of his heels. *It is much easier, said he, to get a new buckler than a new existence.* This pleasantry, however, did not save his reputation; nor could his poetry or prayers prevail upon Lycambes, the father of his mistress, to let him marry his daughter, though she had been long promised to him. After these mortifications his life seems to have been one continued tissue of disgrace and resentment.

Archilochum proprio rabies armavit iambo.

HOR. ART. POET. 79.

Archilochus with fierce resentment warm'd,
Was with his own severe iambics arm'd. FRANCIS.

The *rage of Archilochus* was proverbial in antiquity; which compared the provoking this satirist to the treading upon a serpent: A comparison not very severe, if it be true that Lycambes, and, as some say, his three daughters, were so mortified by his satire, as to be driven to the consolation of a halter.

In this piece, many adventures are mentioned, full of defamation, and out of the knowledge of the public. There were likewise many loose passages in it; and it is said to have been on account of this satire that the

**Val. Max. lib. 6. c. 3.* Lacedemonians laid a prohibition on his verses *.

However, according to Plutarch, there is no bard of antiquity by whom the two arts of poetry and music have been so much advanced as by Archilochus. To him is attributed particularly the sudden transition from one rhythm to another of a different kind, and the manner of accompanying those irregular measures upon the lyre. Heroic poetry, in hexameter verse, seems to have been solely in use among the more ancient poets and musicians; and the transition from one rhythm to another, which lyric poetry required, was unknown to them; so that if Archilochus was the first author of this mixture, he might with propriety be styled the *Inventor of Lyric poetry*, which, after his time, became a species of versification wholly distinct from heroic.—To him is likewise ascribed the invention of *Epodes*. See EPODE.

Our poet-musician is generally ranked among the first victors of the Pythic games; and we learn from Pindar, that his muse was not always a termagant; for though no mortal escaped her rage, yet she was at times sufficiently tranquil and pious to dictate hymns in praise of the gods and heroes. One in particular, written in honour of Hercules, acquired him the acclamations of all Greece; for he sung it in full assembly at the Olympic games, and had the satisfaction of receiving from the judges the crown of victory consecrated to real merit. This hymn, or ode, was afterwards sung in honour of every victor at Olympia, who had no poet to celebrate his particular exploits.

Archilochus was at last slain by one Callondax Corax, of the island of Naxos; who, though he did it in fight, according to the laws of war, was driven out of the temple of Delphi, by command of the oracle, for having deprived of life a man consecrated to the Muses.

The names of Homer and Archilochus were equally revered and celebrated in Greece, as the two most excel-

lent poets which the nation had ever produced. This appears from an epigram in the Anthologia; and from Cicero, who ranks him with poets of the first class, and in his Epistles tells us, that the grammarian Aristophanes, the most rigid and scrupulous critic of his time, used to say, that the longest poem of Archilochus always appeared to him the most excellent.

ARCHIMAGUS, the high-priest of the Persian Magi or worshippers of fire. He resided in the highest fire-temple; which was had in the same veneration with them as the temple of Mecca among the Mahometans. Zoroastres first settled it at Balch; but after the Mahometans had over-run Persia in the 7th century, the Archimagus was forced to remove from thence into Kerman, a province of Persia, lying on the southern ocean, where it hath continued to this day. Darius Hystaspes took upon himself the dignity of Archimagus: for Porphyry tells us, he ordered before his death, that, among the other titles, it should be engraven on his monument, that he had been *Master of the Magi*; which plainly implies that he had borne this office among them, for none but the Archimagus was master of the whole sect. From hence it seems to have proceeded, that the kings of Persia were ever after looked on to be of the sacerdotal tribe, and were always initiated into the sacred order of the Magi, before they took on them the crown, and were inaugurated into the kingdom.

ARCHIMANDRITE, in ecclesiastical history, was a name given by the ancient Christians to what we now call an *abbot*. Father Simon observes, that the word *mandrite* is Syriac, and signifies a solitary monk.

ARCHIMIDES, a celebrated geometrician, born at Syracuse in the island of Sicily, and related to Hiero king of Syracuse. He was remarkable for his extraordinary application to mathematical studies; in which he used to be so much engaged, that his servants were often obliged to take him from thence by force. He had such a surprising invention in mechanics, that he affirmed to Hiero, if he had another earth, whereon to plant his machines, he could move this which we inhabit. He is said to have formed a glass sphere, of a most surprising workmanship, wherein the motions of the heavenly bodies were represented. He discovered the exact quantity of the silver which a goldsmith had mixed with the gold in a crown he had made for the king: he had the hint of this discovery from his perceiving the water rise up the sides of the bath as he went into it, and was filled with such joy, that he ran naked out of the bath, crying, "I have found it! I have found it!" By the invention of machines, he, for a long time, defended Syracuse on its being besieged by Marcellus (See SYRACUSE). On the city's being taken, that general commanded his soldiers to have a particular regard to the safety of this truly great man; but his care was ineffectual. "What gave Marcellus the greatest concern (says Plutarch), was the unhappy Archimides, who was at that time in his museum, and his mind, as well as his eyes, so fixed and intent upon some geometrical figures, that he neither heard the noise and hurry of the Romans, nor perceived the city was taken. In this depth of study and contemplation, a soldier came suddenly upon him, and commanded him

Archimides
||
Archimides

Archimedes.

* *Tuscul. Quæst.* l. iv.

to follow him to Marcellus; which he refusing to do till he had finished his problem, the soldier, in a rage, drew his sword, and ran him through the body." Others have related the circumstances of his death in a somewhat different manner. It however happened 208 years before the Christian æra. Cicero, when he was quæstor in Italy, discovered his tomb, on which was carved a cylinder and sphere *. Some of the works of this great mathematician are lost, but others are preserved. His pieces which remain are, 1. Two books of the sphere and cylinder. 2. The Dimensions of a Circle. 3. Of Centres of Gravity, or Æquiponderants. 4. Of Spheroids and Conoids. 5. Of spiral Lines. 6. The Quadrature of a Parabola. 7. Of the Number of the Sand. 8. Of Bodies that float on Fluids. The best edition of these is that published at London. in 1675, 4to. Among the works of Archimedes which are lost, we may reckon the descriptions of the following inventions, which we may gather from himself and other ancient authors. 1. *Περὶ τῆς σφαιρῆς*, or his account of the method which he used to discover the mixture of gold and silver in the crown. 2. His description of the *Κοχλίας*, or *Κοχλίου*, an engine to draw water out of places where it is stagnated. Athenæus, speaking of the prodigious ship built by the order of Hiero, tells us, that Archimedes invented the cochlion, by means of which the hold, notwithstanding its depth, could be drained by one man. (*Λεῖπνοσοφισμῶν*, lib. v.) Diodorus Siculus informs us (lib. v.) that he contrived this machine to drain Egypt, and that by a wonderful mechanism it would empty the water from any depth. 3. The *Ελίσ*, by means of which (according to Athenæus, *Λεῖπνοσ.* lib. v.) he launched Hiero's great ship. 4. The *Τρισπωσον*, of the power of which Tzetzes gives a hyperbolical relation, *Chil. ii. hist. 35.* 5. The machines he used in the defence of Syracuse against Marcellus.

Of these we have an account in Polybius, Livy, and Plutarch. 6. His burning-glasses, with which he is said to have set fire to the Roman galleys, Galen, *Ἡγεμενίων*, lib. iii. 7. His pneumatic and hydraulic engines, concerning which he wrote books, according to Tzetzes, *Chil. ii. hist. 35.*

ARCHIPELAGO, in geography, a general term signifying a sea interrupted with islands; it is however more especially applied to that lying between Europe and Asia, which contains the islands anciently called *Cyclades* and *Sporades*. See these two words.

ARCHIPHERACITÆ, ministers in the Jewish synagogues appointed to read and interpret the Perakim, or titles and heads of the law and the prophets.

ARCHPRESBYTER, or ARCH-PRIEST, a priest established in some dioceses with a superiority over the rest. He was anciently chosen out of the college of presbyters at the pleasure of the bishop. These arch-presbyters were much of the same nature with deans in the cathedral churches, as the college of presbyters answers to the chapter. See PRESBYTER.

ARCHISYNAGOGUS, the chief of the synagogue; the title of an officer among the Jews, who presided in their synagogues and assemblies. The number of these officers was not fixed, nor the same in all places; there being 70 in some, and in others only one. They are sometimes called *princes* of the synagogue, and had a power of excommunicating such as deserved that punishment.

ARCHITECT, a person skilled in architecture, or the art of building; who forms plans and designs for edifices, conducts the work, and directs the several artificers employed in it. The word is derived from *αρχος*, *principes*, and *τεκτων*, *faber*, workmen; q. d. the principal workman.

Archipelago
||
Architect.

A R C H I T E C T U R E,

IN the utmost latitude of the word, signifies the art of building in general; but the term is most frequently applied only to the construction of such buildings as are necessary for the purposes of civil life, such as houses, churches, halls, bridges, porticos, &c.

History of Architecture.

THE origin of this art, like that of most others, is totally unknown. We are assured, however, that it is as old as Cain: for Moses tells us that he built a city; tho' what were the materials, or how the buildings were constructed, we are entirely ignorant. It is commonly said, that the first materials employed in building were branches and twigs of trees, wherewith men constructed huts, such as the *wigwags* in use among the American Indians at present. This, however, appears disputable. The natural shelter afforded by hollows in the sides of mountains or rocks, it may be supposed, would much more readily suggest the idea of using stones and earth as materials for building houses. Indeed, considering that tents were not invented before the days of Jabal, Tubal-Cain's brother, it is very probable that such temporary houses as the Indian wig-

wags were not originally known: otherwise the method of covering poles with the skins of beasts, instead of small branches or twigs, must very soon have taken place. These temporary houses seem to have come into use only when men began to lead an idle wandering life, like the Tartars, and could not be at the trouble of constructing durable habitations in every place where they were obliged to wander with their cattle; and Jabal perhaps from them took the hint of making portable houses or tents. Accordingly we see, that no nations, except those who are in a perpetually unsettled state, make use of such wretched materials. Even in America, where the human race has appeared in the rudest form, they were no sooner collected into great bodies under the emperors of Mexico and Peru, than stone-buildings began to be erected.

We are not, therefore, to look for the origin of architecture in any single nation; but in every nation, when the inhabitants began to leave off their savage way of life, and to become civilized; and if there is any nation to be found which hath been always in a civilized state, we may be assured that architecture hath always had an existence there. But whatever may be in this, the origin of regular buildings hath been de-

Materials
first used
in building.

2
Primitive
huts.
Plate
XXXIV.
fig. 1.

duced from the construction of the meanest huts in a very natural and plausible manner by several authors. "Anciently (says Vitruvius) men lived in woods, and inhabited caves; but in time, taking perhaps example from birds, who with great industry build their nests, they made themselves huts. At first they made these huts, very probably, of a conic figure; because that is a figure of the simplest structure; and, like the birds, whom they imitated, composed them of branches of trees, spreading them wide at the bottom, and joining them in a point at the top; covering the whole with reeds, leaves, and clay, to screen them from tempests and rain.

3
Their im-
provement.

Plate
XXXIV.
fig. 2.

"But finding the conic figure inconvenient on account of its inclined sides, they changed both the form and construction of their huts, giving them a cubical figure, and building them in the following manner: Having marked out the space to be occupied by the hut, they fixed in the ground several upright trunks of trees to form the sides, filling the intervals between them with branches closely interwoven and covered with clay. The sides being thus completed, four large beams were placed on the upright trunks: which, being well joined at the angles, kept the sides firm, and likewise served to support the covering or roof of the building, composed of many joists, on which were laid several beds of reeds, leaves, and clay.

"Insensibly mankind improved in the art of building, and invented methods to make their huts lasting and handsome as well as convenient. They took off the bark, and other unevennesses, from the trunks of trees that formed the sides; raised them, probably, above the dirt and humidity, on stones; and covered each of them with a flat stone or slate, to keep off the rain. The spaces between the ends of the joists were closed with clay, wax, or some other substance; and the ends of the joists covered with thin boards cut in the manner of triglyphs. The position of the roof was likewise altered: for being, on account of its flatness, unfit to throw off the rains that fell in great abundance during the winter season, they raised it in the middle; giving it the form of a gable roof, by placing rafters on the joists, to support the earth and other materials that composed the covering.

Fig. 3.

"From this simple construction the orders of architecture took their rise. For when buildings of wood were set aside, and men began to erect solid and stately edifices of stone, they imitated the parts which necessity had introduced into the primitive huts; in so much that the upright trees, with the stones at each end of them, were the origin of columns, bases, and capitals; and the beams, joists, rafters, and strata of materials that formed the covering, gave birth to architraves, frizes, triglyphs, and cornices, with the corona, the mutules, the modillions, and the dentils.

"The first buildings were in all likelihood rough and uncouth: as the men of those times had neither experience nor tools; but when, by long experience and reasoning upon it, the artists had established certain rules, had invented many instruments, and by great practice had acquired a facility in executing their ideas, they made quick advances towards perfection, and at length discovered certain manners of building, which succeeding ages have regarded with the highest veneration."

Among the ancient Egyptians, Assyrians, and Persians, this art was carried to an incredible length. The pyramids of Egypt are such structures as would exceed the power of the most potent monarch on earth to raise at this day. The largest of these, according to the account of M. Gouget, is near 500 feet high, and contains 313,590 solid fathoms. It is composed of stones enormously large; many of them being 30 feet long, four feet high, and three in breadth; and all this huge mass of building was coated over with square flags of marble.—The structure called the *labyrinth*, in the same country, according to Herodotus, who saw it, excelled every thing which he could have conceived from the imagination either of himself or others. Within the same circuit of walls they had inclosed 3000 halls, 12 of which were of a singular form and beauty; and of these, half were above, and half below ground; and the whole was terminated by a pyramid 40 fathoms high. All this prodigious mass of building was composed of white marble, and the walls were adorned with engravings.—The obelisks were not less astonishing: the largest of them being entire pieces of granite, no less than 180 feet high.—Near Andera, in Upper Egypt, are the ruins of a palace of gray granite, the ceilings of which are supported by columns of such thickness, that four men can scarcely fathom them. The ceilings themselves are composed of stones of the same kind, six or seven feet in breadth and 18 feet in length. The grand hall is 112 feet long, 60 high, and 58 broad. The roof of the whole edifice is a terrace, on which the Arabs formerly built a very large village, the ruins of which are still visible.

Among the Babylonians and Persians, too, such immense piles of building have been raised, as appear utterly inconceivable, and incredible to many modern authors where their former grandeur is not demonstrable by ruins visible at this day. The ruins of Persepolis, the ancient capital of Persia, were so stupendous in the time of Avicenna the Arab physician, that his countrymen could not believe such structures possible to be erected but by evil spirits. Of their extraordinary magnificence, indeed, we may have some idea from the account of the stair-cases belonging to the palace. The remains, some time ago, consisted of 95 steps of white marble, so broad and flat, that 12 horses might conveniently go up abreast.

In these vast structures, however, the nations of whom we speak seem to have regarded the greatness, rather than the elegance or usefulness of their works. In the pyramids and obelisks of Egypt this is exceedingly conspicuous; but whether it was so in the labyrinth or in the palace at Thebes above mentioned, it is impossible to determine, unless the buildings were entire, and we knew for what purpose they had been designed. If the kings who built the pyramids designed to immortalize their memories by building, they certainly could not have fallen upon any thing more proper for this purpose; though even in this they have some how or other failed, the names of those who erected them not being certainly known even in the time of Herodotus.—It is certain, however, that neither the ancient Assyrians nor Babylonians knew the method of constructing arches. The roofs of all their halls were flat, and covered with prodigiously large stones, some of them so big as to cover a whole room singly. Their manner

4
State of ar-
chitecture
among the
Egyptians.

5
Among the
Babyloni-
ans and
Persians.

6
Their
buildings
more re-
markable
for great-
ness than
elegance.

7
Ignorant of
the use of
arches,
of

8
And of proportioning columns.

9
Origin of the Doric order.

of building was also quite destitute of what is now called *taste*, the columns were ill-proportioned, and their capitals executed in the poorest manner imaginable. This was observed by the Greeks, who improved upon the proportions formerly used, and were the inventors of three of the five orders of architecture, viz. the Doric, Ionic, and Corinthian. "Anciently (says Vitruvius) they were ignorant of the art of proportioning the various parts of a building: they used columns; but they cut them at hazard, without rules, without principles, and without having any attention to the proportions which they ought to give them: they placed them likewise without any regard to the other parts of the edifice. Dorus, son of Helen and grandson of Deucalion, having caused a temple to be built at Argos in honour of Juno, that edifice was found by chance to be constructed according to the *taste* and proportions of the order which afterwards they called *Doric*. The form of this building having appeared agreeable, they conformed to it for the construction of edifices which they afterwards had to build.

"About the same time, the Athenians sent into Asia a colony under the conduct of Ion, nephew of Dorus: this undertaking had very good success. Ion seized on Caria, and there founded many cities: these new inhabitants thought to build temples. They proposed for a model that of Juno at Argos; but, ignorant of the proportion which they ought to give to the columns, and in general to the whole edifice, they sought for rules capable of regulating their operation. These people wanted, in making their columns sufficiently strong to support the whole edifice, to render them at the same time agreeable to the sight. For this purpose, they thought to have given it the same proportion that they found between the foot of a man and the rest of his body. According to their ideas, the foot made a sixth part of the human height: in consequence, they gave at first to a Doric column, taking in its chapter, six of its diameters; that is to say, they made it six times as high as it was thick: afterwards they added to it a seventh diameter.

10
Of the Ionic

"This new order of architecture was not long in giving birth to a second: they would immediately go beyond their first invention. The Ionians tried to throw still more delicacy and elegance into their edifices. They employed the same method which they had before put in practice for the composition of the Doric order: but instead of taking for a model the body of a man, the Ionians were regulated by that of a woman. With a view to make the columns of this new order more agreeable and more pleasing, they gave them eight times as much height as they had diameter. They also made channelings all along the trunk to imitate the folds of the robes of women: the volutes of the chapter represented that part of the hair which hung in curls on each side of the face. The Ionians added, lastly, to these columns a base, which was not in use in the Doric order." According to Vitruvius, these bases were made in the manner of twisted cords, as a kind of case for the columns. This order of architecture was called *Ionic*, from the name of the people who had invented it.

Such is the account given by Vitruvius of the origin of improvements in the proportion of columns. Had

these improvements, however, existed in such early times, Homer, who was greatly posterior to them, would certainly have made mention of something of that kind; but in all his writings he gives us no account of any thing like columns of stone, but uses a word which would rather incline us to think that his columns were nothing more than bare posts.

It is remarkable, that improvements in architecture did not take place in any nation till after, or about, the time that Jerusalem was taken by Nebuchadnezzar. The grandest buildings erected among the Assyrians seem to have owed their existence to this monarch; and it can scarce be imagined that he would not endeavour to imitate the architecture of Solomon's temple, to which, by his conquest of Jerusalem, he had full access.—It is also remarkable, that the dimensions of the two pillars, Jachin and Boaz, set up by Solomon, very nearly correspond with those of the Doric order, first invented by the Greeks, and which originally came from their colonies settled in Asia Minor. The height of Solomon's pillars, without the chapter, was 18 cubits; that of the chapter itself was five cubits; the circumference was 12 cubits; from whence, according to the Scripture language, we may reckon the diameter to have been exactly four cubits. Had they been a single cubit higher, they would have been precisely of the same height with columns of the original Doric order. We do not indeed mean to assert, that this famous temple gave a model of architecture to the whole world; although it is scarce conceivable but imitations of it, as far as it could be known, must have taken place among many nations.

Notwithstanding all their defects, however, the Egyptian buildings undoubtedly had an air of vast grandeur and magnificence, if we may credit the description given of one of their banqueting-rooms by Vitruvius. The usual size of one of these rooms was from 100 to 150 feet in length, and its breadth somewhat more than half its length. At the upper end, and along the two sides, they placed rows of pillars tolerably well proportioned to one another, though not of any regular order; and at the lower part they made a magnificent and spacious entrance: this, with its ornaments, seems to have taken up one end of the building entire. We are not told that there were any pillars there; tho' perhaps they placed two or more toward the angles on each side, for uniformity, the central space being enough for an entrance in the grandest and most august manner. These rows of columns were set at a distance from the wall, forming a noble portico along the two sides and upper end of the building. Upon the pillars was laid an architrave; and from this was carried up a continued wall with three quarter columns, answering directly to those below, and in proportion one fourth smaller in all their parts. Between these three quarter columns were placed the windows for enlightening the building. From the tops of the lower pillars to the wall was laid a floor: this covered the portico overhead within, and made on the outside a platform, which was surrounded by a corridor with rails and balusters. This was terraced, and served as a plain for people to walk on; and from this they could look through the windows down into the room. To this terrace there was no covering required, as the Egyptians were in no fear of rain. The Egyptians decorated this sort of

11
Hints of improvement probably taken from Solomon's temple.

12
Egyptian banqueting room described.

building with statues; and no kind of ornament could answer it so well, as the light cannot fall upon statues to such advantage in any direction, as when it comes from above, in such a regular, proportioned, and uninterrupted manner.

13
Ancient
architec-
ture supe-
rior in gran-
deur to the
modern.

We have already taken notice, that among the ancient Egyptians, Persians, and Babylonians, the vast strength and extent of their buildings seems to have been what they chiefly valued; and in this they certainly as much excelled the Greeks and modern nations as the latter excel them in the beautiful proportion and elegance of their structures. There are not wanting, however, some modern authors, who endeavour to deprive the ancients of what is justly their due, and will have every thing to be exaggerated which seems beyond the power of modern princes to accomplish. In this way M. Goguet remarkably distinguishes himself; and that without giving any reason at all, but merely that he takes it into his head. Speaking of the wonders of ancient Babylon, "All these works (says he), so marvellous in the judgment of antiquity, appear to me to have been extremely exaggerated by the authors who have spoken of them. How can we conceive, in effect, that the walls of Babylon could have been 318 feet high and 81 in thickness, in a compass of near ten leagues?" To this we may easily reply, that the pyramids of Egypt, and the immense wall which divides China from Tartary, show us, that even such a work as the wall of ancient Babylon is said to have been is not altogether incredible. The lowest computation of the dimension of the Chinese wall is, that it extends in length 1200 miles, is 18 feet high at a medium, and as many thick; according to which computation, it must contain 9,504,000 solid fathoms; and yet, if we may credit the Chinese historians, this immense mass of building was finished in five years. If therefore we can suppose Nebuchadnezzar, or whoever fortified the city of Babylon, to have been capable of employing as many men for 10 years as were employed in raising the Chinese wall, we may suppose him able to have fortified the city of Babylon as strongly as it is said to have been; for the mass of building is not quite double that of the Chinese wall, though nearly so, amounting to 18,189,600 solid fathoms. When our author afterwards gasconades about the works of the French king, it is difficult to avoid laughter at hearing him declare, that "infinitely more money has been expended, and much more genius required, as well as more power, taste, and time, to finish Versailles, with all its defects, than to construct a pyramid, or erect an obelisk." The genius, taste, and time, we shall not dispute; but as the same author confesses that 100,000 men were employed for 30 years together in the construction of the largest pyramid, we think the power may justly be doubted. This doubt will appear still the more reasonable, when we consider what time the abovementioned number of men would have taken to accomplish some of the works which M. Goguet boasts so much. The canal of Languedoc, he tells us, extends in length upwards of 70 leagues, and required the removal of two millions of cubic fathoms of earth. This was no doubt a great work; but had 100,000 men been employed upon it at once, they must have removed this quantity of earth in three weeks, supposing each to have removed only a single fathom a-day.

Nor can we imagine, that any modern work will at all stand in competition with the works of the ancients as to greatness, whatever they may do in other respects.

As to the improvements in architecture, the Greeks were undoubtedly the first European nation who began to distinguish themselves in this way. Whence they took the first hint of improvement, we have no means of knowing: though, as we have already hinted, it is scarce credible but that Solomon's temple must have somewhat contributed thereto; especially as we learn from Scripture, that the capitals of the columns there were ornamented in the richest manner. The origin of the Doric and Ionic orders we have already given an account of from Vitruvius; to which we may add, that the volutes, which are the peculiar ornament of the Ionic capital, are by some said to represent the natural curling down of a piece of bark from the top of a beam, which is supposed to have been the first kind of column.—The Corinthian order was not invented till long after the others, and is said to have taken its rise from the following accident: A basket had been set upon the ground, and covered with a square tile: there grew near it a plant of acanthus or bears-breech; the leaves shot up and covered the outer surface of the basket; and as the stalks rose up among them, they soon reached the tile which overhung the edges of the basket at the top; this stopping their course upwards, they curled and twisted themselves into a kind of volutes. In this situation a sculptor, Callimachus, saw it; the twisted part of the stalk represented to him the volutes of the Ionic capital, which, as they were here smaller, and more numerous, appeared in a new form: he saw the beauty of raising them among leaves, and was struck with the representation of a noble and lofty capital; which being afterwards put into execution, has been universally admired.

14
Architec-
ture impro-
ved by the
Greeks.

15
Origin of
the Corin-
thian order.

In their private houses the Greeks had greater conveniences, but much less magnificence, than the Romans, as the former reserved the use of their grandest architecture for their temples and public buildings. The entrance to their private houses, however large they were, was always small, narrow, and plain. The whole edifice usually consisted of two courts, and several ranges of building. The porter's lodge, if such a phrase may be allowed, was usually on the right hand of this narrow entrance, and opposite to this were the stables. From this entrance one came into the first or smaller court. This had piazzas on three sides; and on the fourth, which was usually the south side, there were buttments of pilasters, which supported the more inward parts of the ceiling.—A space being thus left between the one and the other, they had places for the lodgings of men and maid servants, and such as had the principal care of the house. Upon the same floor with these buttments they had several regular apartments, consisting of an antichamber, a chamber and closets; and about the piazzas, rooms for eating and other common purposes.—Opposite to the entrance was a lobby or vestibule, through which lay the passage into the several rooms; and through this, in front, one entered a large passage, which led into the larger or principal square. Round this they had four piazzas, which, in the common way of building, were all of one height; but, in more magnificent houses, they made that which

16
Private
houses of
the Greeks.

faced

faced the great entrance loftier, and every way nobler than the other three. A nobleman of Rhodes added this to the common method of building; and it was thence called the *Rhodian* manner. In this, more noble part of the building were the apartments of the family. These were adorned with lofty galleries, and here were the best rooms: they were called the *mens apartments*; for, in rude times, the Greeks lodged their wives and female relations in the best rooms of the first court, where they had also their separate and detached place. The two sides of this larger court were kept for the reception of visitors; and servants were appointed to wait upon them. The master of the house entertained his guests the first day in his own apartments; but after this, how long soever they staid, they lived without restraint in one of those separate piazzas, and joined the family only when they chose it. Thus was the upper end and two sides of the great court disposed of; and its lower end, being the same range of building that was the upper end of the first court, held the lady of the house and her female friends.

¹⁷
Of the Ro-
mans.

The Romans borrowed their architecture from the Greeks, but did not imitate them in the modesty of their private dwellings. They placed the principal front of their house towards the south, and on this they bestowed all the decoration of expensive ornament. They had here lofty galleries and spacious rooms, and every thing carried an air of greatness and show. In their country houses they preserved the same situation and the same front, but the inner distribution was different. At the entrance they placed the meaner and more offensive offices, after the manner of the Greeks. The first gallery, which received the stranger at his entrance, had on one side a passage to the kitchen, and on the other to the stalls where they kept cattle, that their noise or smell might not be offensive within, while yet they were in readiness for all services. These stalls were placed to the left, as in the Greek houses; on the right was the kitchen, which had its light from above, and its chimney in the middle. Farther within the building were placed on one side bathing-rooms, and on the other family-conveniences, in the manner of our butteries and store-rooms: the bathing-rooms were on the left, and the others on the right. Backwards, and full to the north, they placed their cellars, for fear of the sun, and over these were other store-rooms. From this part of the structure one came into the court; for in these there generally was only one court: this was taken up by servants, and those who had the care of the cattle; and on each side there were stalls for the cattle. In front from the entrance, but very far from all these annoyances, stood the nobler apartments for the master of the family.

¹⁸
Decline of
the art a-
mong the
Romans.

How magnificent the Romans were in their temples and public buildings, is yet to be seen in what remains of them, and which are not only models for all modern architects, but have never been surpassed or even equalled to this day. But though the art of architecture continued almost at its highest pitch among the Romans for two centuries, it declined exceedingly as the empire began to fail. Tacitus relates, that after the battle of Actium no men of genius appeared; and after the reign of Alexander Severus, a manner of building altogether confused and irregular was introduced, wherein nothing of the true graces and majesty of the

former was preserved. When the empire was entirely over-run by the Goths, the conquerors naturally introduced their own method of building. Like the ancient Egyptians, the Goths seem to have been more studious to amaze people with the greatness of their buildings than to please the eye with the regularity of their structure, or the propriety of their ornaments. They corrected themselves, however, a little by the models of the Roman edifices which they saw before them: but these models themselves were faulty; and the Goths being totally destitute of genius, neither architecture nor any other art could be improved by them.

¹⁹
Gothic
manner of
building.

Most writers who mention the ancient buildings in this island, particularly the religious ones, notwithstanding the striking difference in the styles of their construction, class them all under the common denomination of *Gothic*; a general appellation by them applied to buildings not exactly conformable to some one of the five orders of architecture. Our modern antiquaries, more accurately, divide them into Saxon,—Norman,—and Saracenic, or that species vulgarly tho' improperly called *modern Gothic*.

It has been maintained by some, that the Saxon churches, after they began to be built with stone, consisted only of upright walls, without pillars or arches, the construction of which it is alleged they were entirely ignorant of. But this opinion is not only contradicted by the testimony of several cotemporary or very ancient writers, who expressly mention them both, but also by the remains of some edifices universally allowed to be of Saxon workmanship, one of them the ancient conventual church at Ely. Indeed, it is highly improbable that the Saxons could be ignorant of so useful a contrivance as the arch. Many of them, built by the Romans, they must have had before their eyes; some of which have reached our days: two particularly are now remaining in Canterbury only; one in the castle-yard, the other at Riding-gate. And it is not to be believed, that once knowing them and their convenience, they would neglect to make use of them; or having used, would relinquish them. Besides, as it appears from undoubted authorities they procured workmen from the Continent to construct their capital buildings "according to the Roman manner," this alone would be sufficient to confute that ill-grounded opinion; and at the same time proves, that what we commonly call *Saxon*, is in reality Roman architecture.

²⁰
Of the Sax-
on and Nor-
man styles.

This was the style of building practised all over Europe; and it continued to be used by the Normans, after their arrival here, till the introduction of what is called the *modern Gothic*, which was not till about the end of the reign of Henry II. so that there seems to be little or no grounds for a distinction between the Saxon and Norman architecture. Indeed it is said, the buildings of the latter were of larger dimensions both in height and area; and they were constructed with a stone brought from Caen in Normandy, of which their workmen were peculiarly fond; but this was simply an alteration in the scale and materials, and not in the manner of the building. The ancient parts of most of our cathedrals are of this early Norman work.—The characteristic marks of this style are these: The walls are very thick, generally without buttresses; the arches, both within and without, as well as those over the doors and windows, semicircular, and supported by very

very solid, or rather clumsy, columns, with a kind of regular base and capital: in short, plainness and solidity constitute the striking features of this method of building. Nevertheless, the architects of those days sometimes deviated from this rule: their capitals were adorned with carvings of foliage, and even animals; and their massive columns decorated with small half columns united to them, and their surfaces ornamented with spirals, squares, lozenge net-work, and other figures, either engraved or in relief. Various instances of these may be seen in the cathedral of Canterbury, particularly the under croft, the monastery at Lindisfarn, or Holy island, the cathedral at Durham, and the ruined choir at Orford in Suffolk. The columns 1, 1, 1, 1, (Plate XXXIII.), are at the monastery of Lindisfarn, or Holy island. Those 2, 2, 2, belong to the ruined chancel at Orford in Suffolk. No 3 is at Christ-Church, Canterbury. No 4, a column with two remarkable projections like claws, in the south aisle of Romsey-church, Hampshire.

21
Of the modern Gothic or Saracenic style.

To what country or people the *modern Gothic*, or the style of building with pointed arches so called, owes its origin, seems by no means satisfactorily determined. Some have imagined it may possibly have taken its rise from those arcades we see in the early Norman or Saxon buildings or walls, where the wide semicircular arches cross and intersect each other, and form at their intersection a narrow and sharp-pointed arch: But it is more generally conjectured to be of Arabian extraction, and to have been introduced into Europe by some persons returning from the Crusades in the Holy Land. Sir Christopher Wren was of that opinion, and it has been subscribed to by most writers who have treated on this subject.

"Modern Gothic, as it is called (says Rious), is distinguished by the lightness of its work, by the excessive boldness of its elevations and of its sections; by the delicacy, profusion, and extravagant fancy of its ornaments. The pillars of this kind are as slender as those of the ancient Gothic are massive; such productions, so airy, cannot admit the heavy Goths for their author. How can be attributed to them a style of architecture, which was only introduced in the tenth century of our æra, several years after the destruction of all those kingdoms which the Goths had raised upon the ruins of the Roman empire, and at a time when the very name of Goth was entirely forgotten? From all the marks of the new architecture, it can only be attributed to the Moors; or, what is the same thing, to the Arabians or Saracens, who have expressed, in their architecture, the same taste as in their poetry; both the one and the other falsely delicate, crowded with superfluous ornaments, and often very unnatural: the imagination is highly worked up in both; but it is an extravagant imagination; and this has rendered the edifices of the Arabians (we may include the other orientals) as extraordinary as their thoughts. If any one doubts of this assertion, let us appeal to any one who has seen the mosques and palaces of Fez, or some of the cathedrals in Spain built by the Moors: one model of this sort is the church at Burgos: and even in this island there are not wanting several examples of the same; such buildings have been vulgarly called modern Gothic, but their true appellation is Arabic, Saracenic, or Morefque.—This manner was introduced

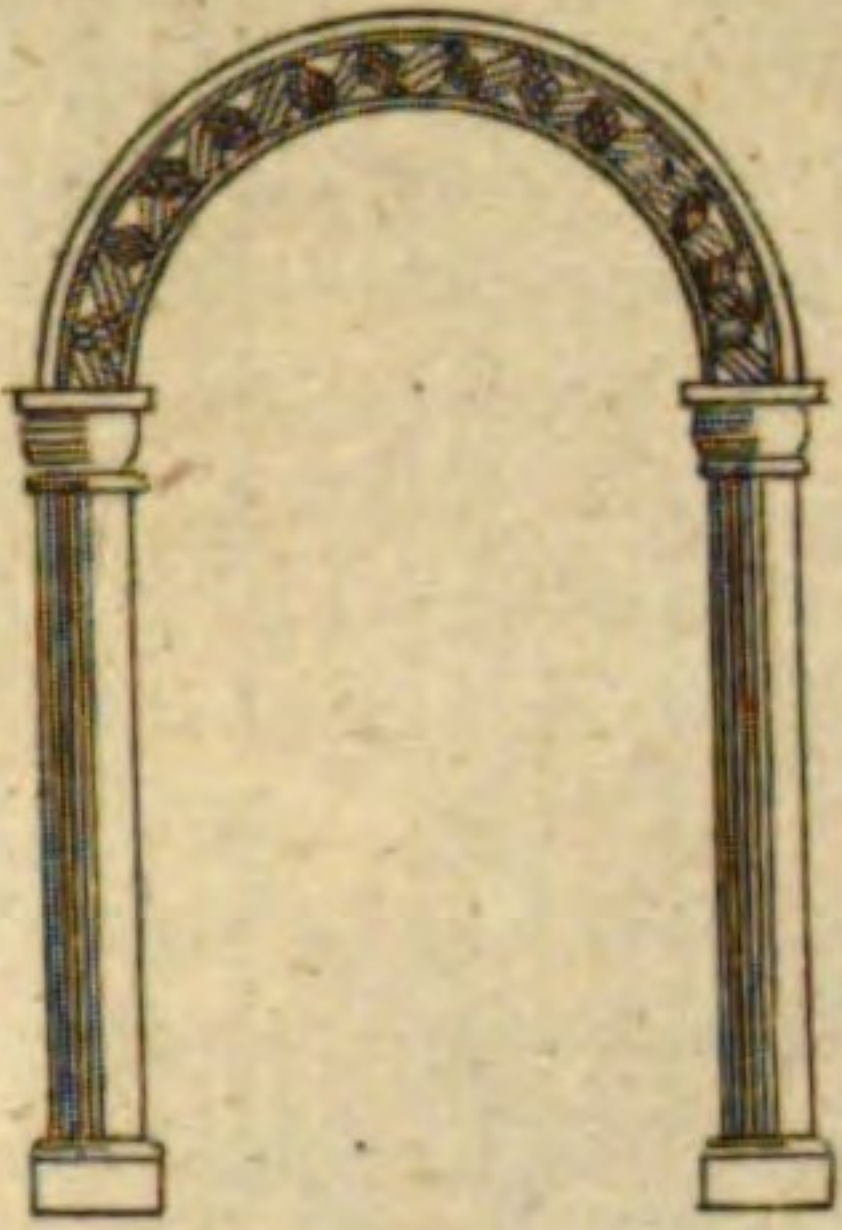
into Europe thro' Spain. Learning flourished among the Arabians all the time that their dominion was in full power; they studied philosophy, mathematics, physic, and poetry. The love of learning was at once excited; in all places that were not at too great a distance from Spain, these authors were read; and such of the Greek authors as they had translated into Arabic, were from thence turned into Latin. The physic and philosophy of the Arabians spread themselves in Europe, and with these their architecture: many churches were built after the Saracenic mode; and others with a mixture of heavy and light proportions, the alteration that the difference of the climate might require, was little, if at all considered. In most southern parts of Europe, and in Africa, the windows (before the use of glass), made with narrow apertures, and placed very high in the walls of the building, occasioned a shade and darkness within side, and were all contrived to guard against the fierce rays of the sun; yet were ill suited to latitudes, where that glorious luminary shades its feeble influences, and is rarely seen but through a watery cloud."

Mr Grose, however, thinks the above opinion is not sufficiently favoured by the observations of several learned travellers who have accurately surveyed the ancient mode of building in those parts of the world. Thus Cornelius Le Brun, an indefatigable and inquisitive traveller, has published many views of eastern buildings, particularly about the Holy Land: in all these, only one Gothic ruin, the church near Acre, and a few pointed arches, occur; and those built by the Christians when in possession of the country. Near Ispahan, in Persia, he gives several buildings with pointed arches: but these are bridges and caravanseras, whose age cannot be ascertained; consequently are as likely to have been built after as before the introduction of this style into Europe. At Ispahan itself, the mey doen, or grand market-place, is surrounded by divers magnificent Gothic buildings; particularly the royal mosque, and the Talaal Ali-kapie, or theatre. The magnificent bridge of Alla-werdie-chan, over the river Zenderoet, 540 paces long and 17 broad, having 33 pointed arches, is also a Gothic structure; but no mention is made when or by whom these are built. The Chiaer Baeg, a royal garden, is decorated with Gothic buildings; but these were, it is said, built only in the reign of Scha Abbas, who died anno 1629. One building indeed, Mr Grose admits, seems at first as if it would corroborate this assertion, and that the time when it was erected might be in some degree fixed; it is the tomb of Abdalla, one of the apostles of Mahomet, probably him surnamed Abu Becr. "If this tomb (says he) is supposed to have been built soon after his death, estimating that even to have happened according to the common course of nature, it will place its erection about the middle of the seventh century; but this is by far too conjectural to be much depended on. It also seems as if this was not the common style of building at that time, from the temple of Mecca; where, if any credit is to be given to the print of it in Sale's Koran, the arches are semicircular. The tomb here mentioned has one evidence to prove its antiquity; that of being damaged by the injuries of time and weather. Its general appearance much resembles the east end of the chapel belonging to

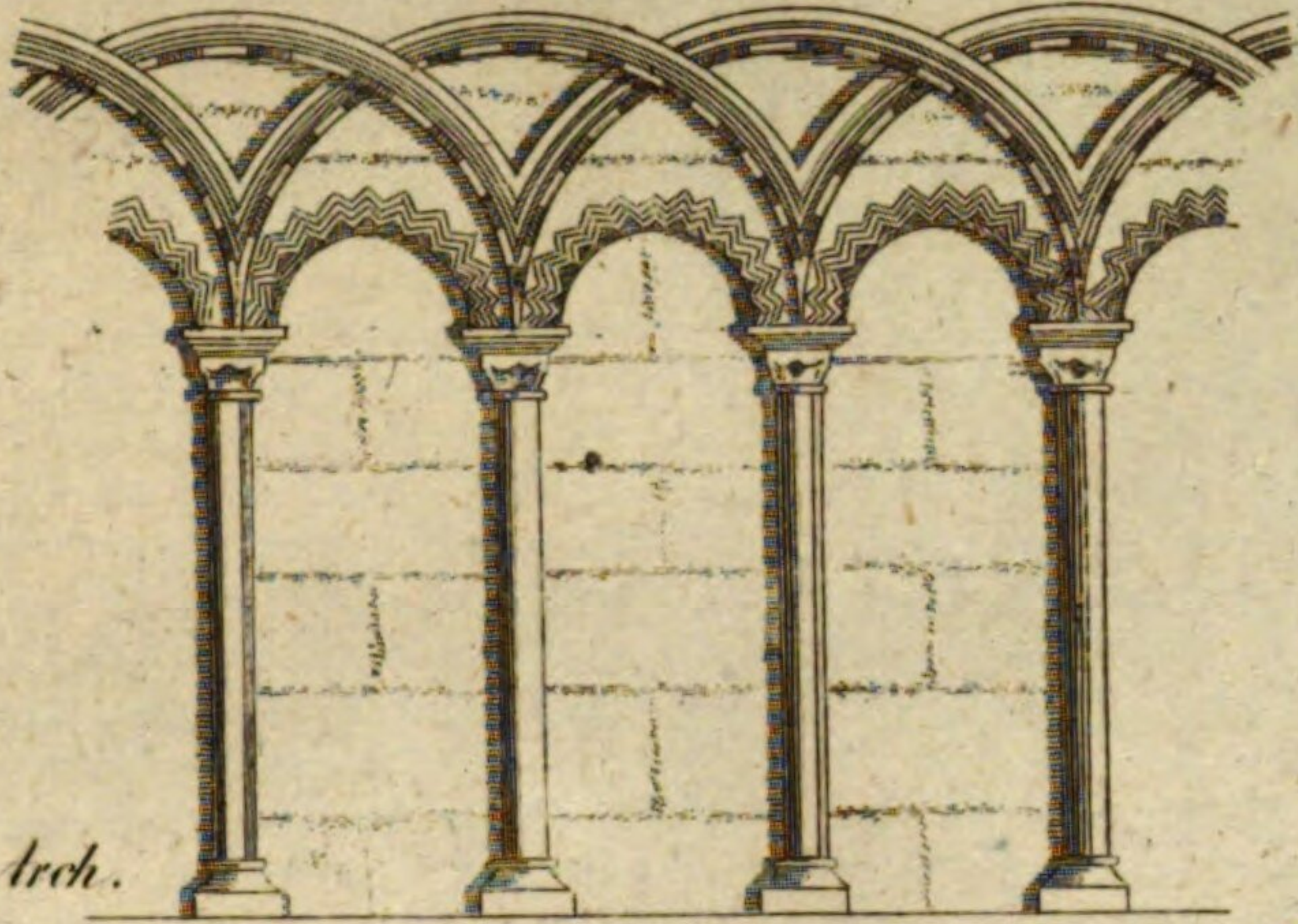
Saxon Capitals



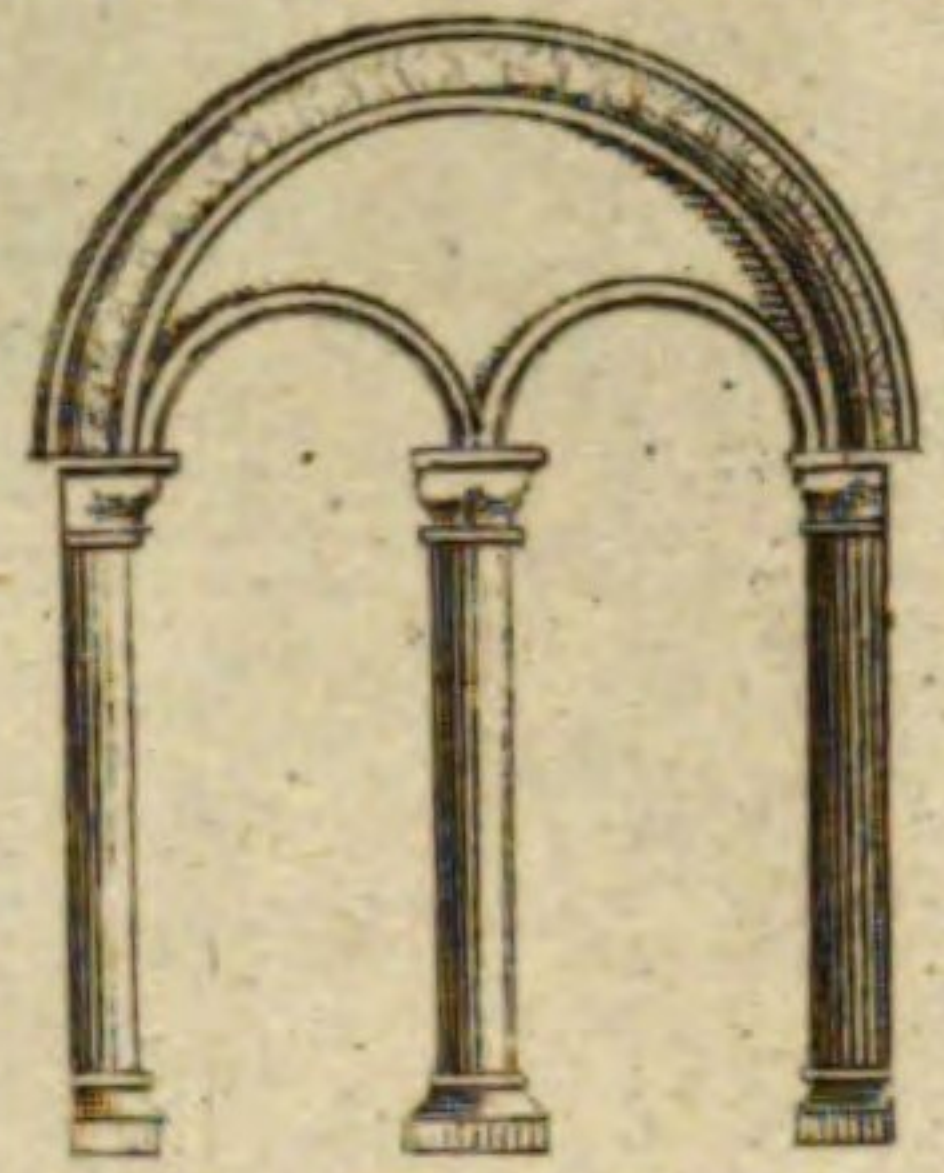
Saxon Arch



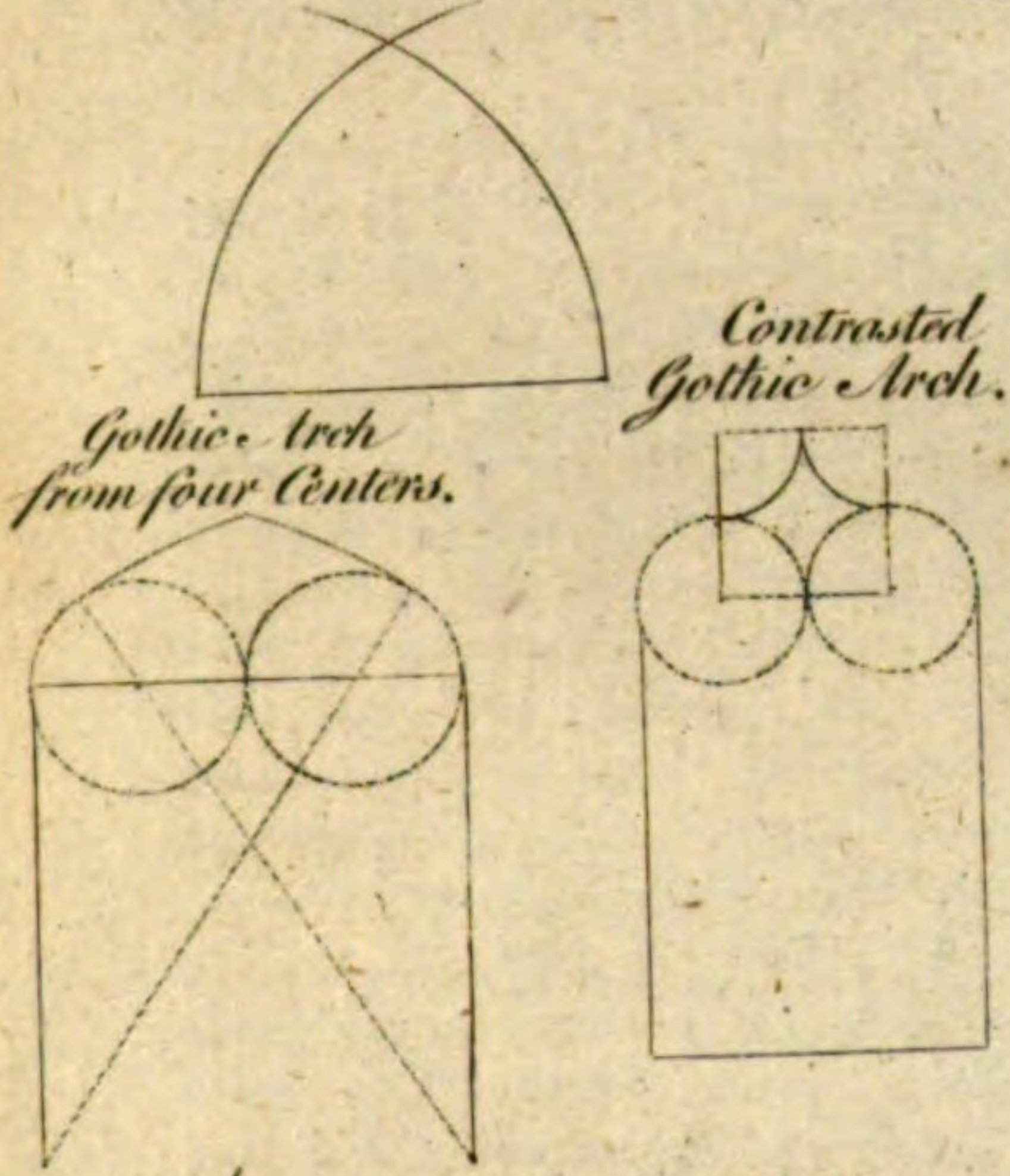
Saxon Arches



Saxon Arch



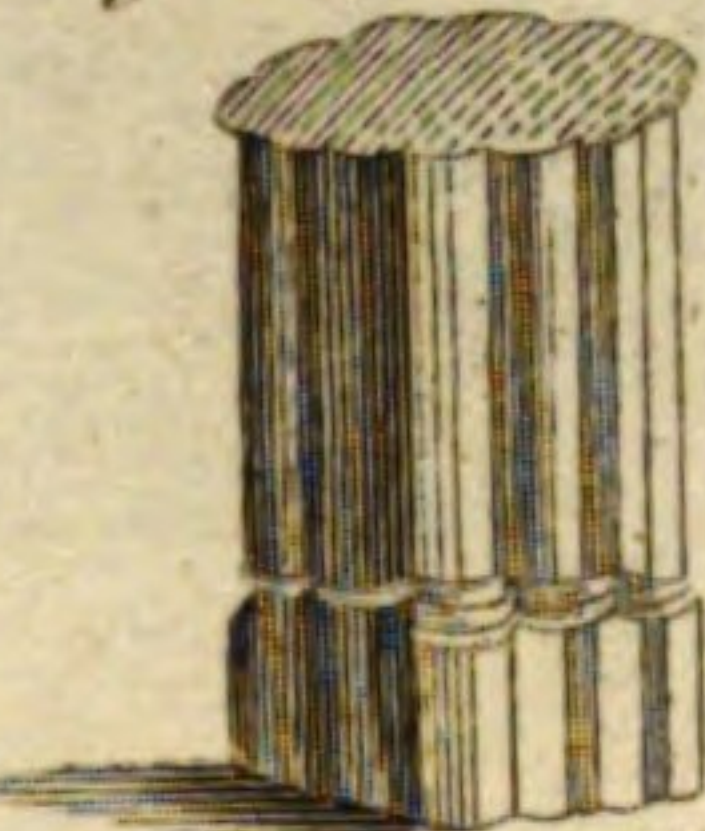
Method of describing a Gothic Arch.



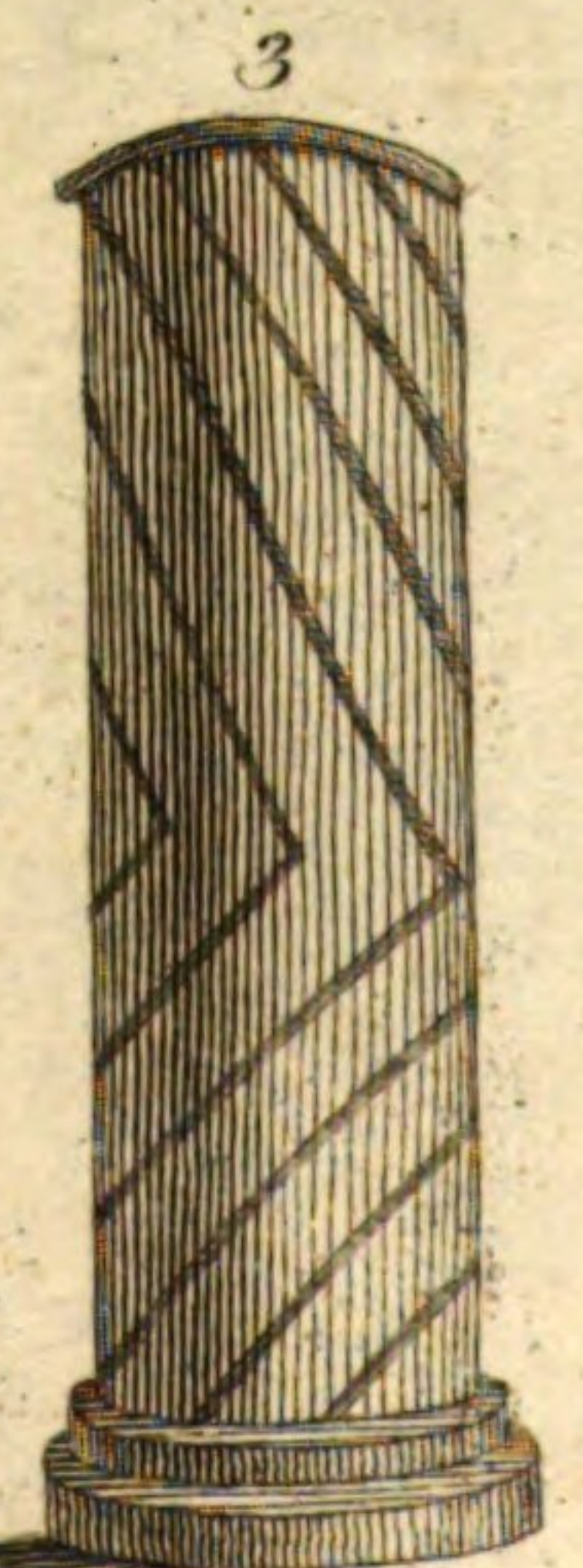
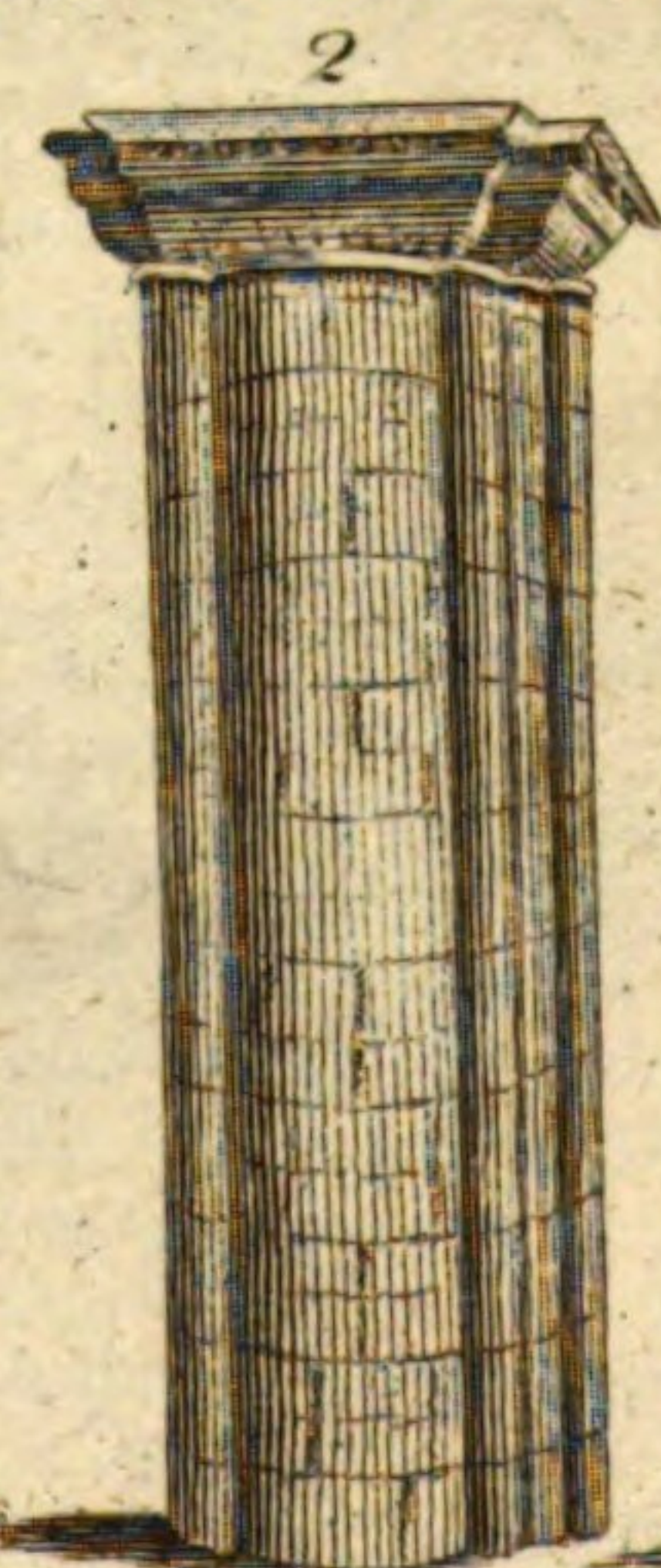
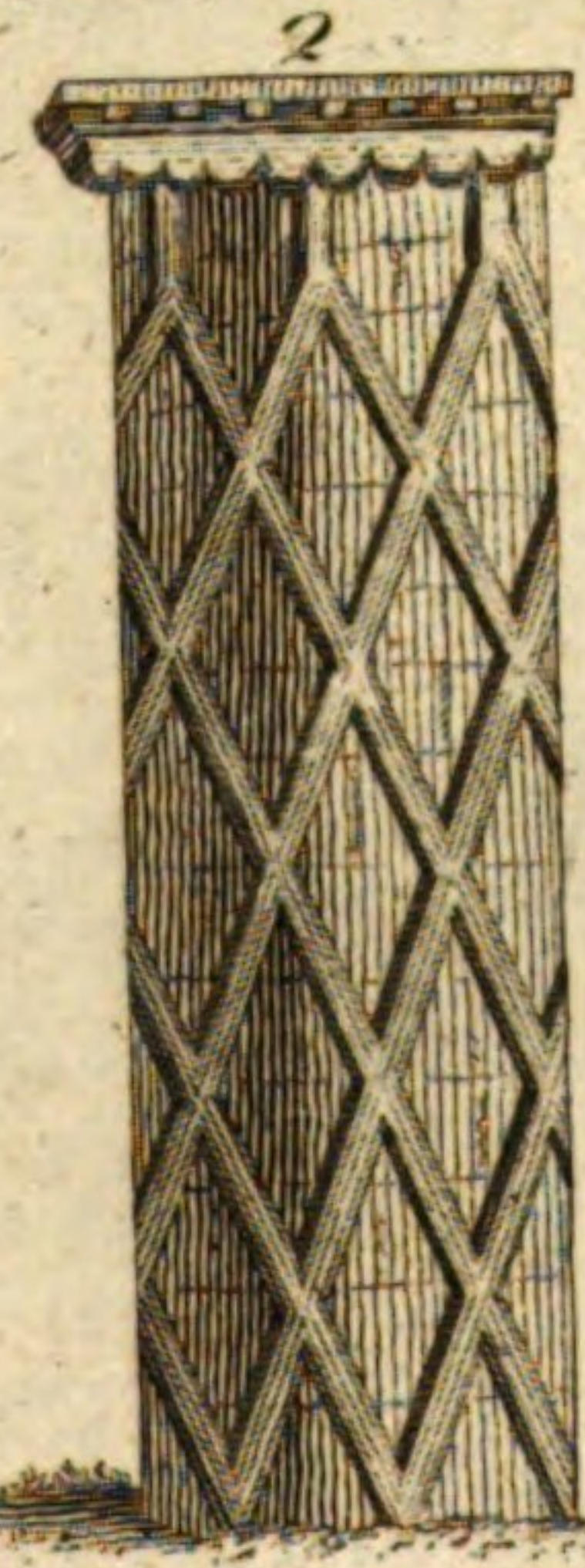
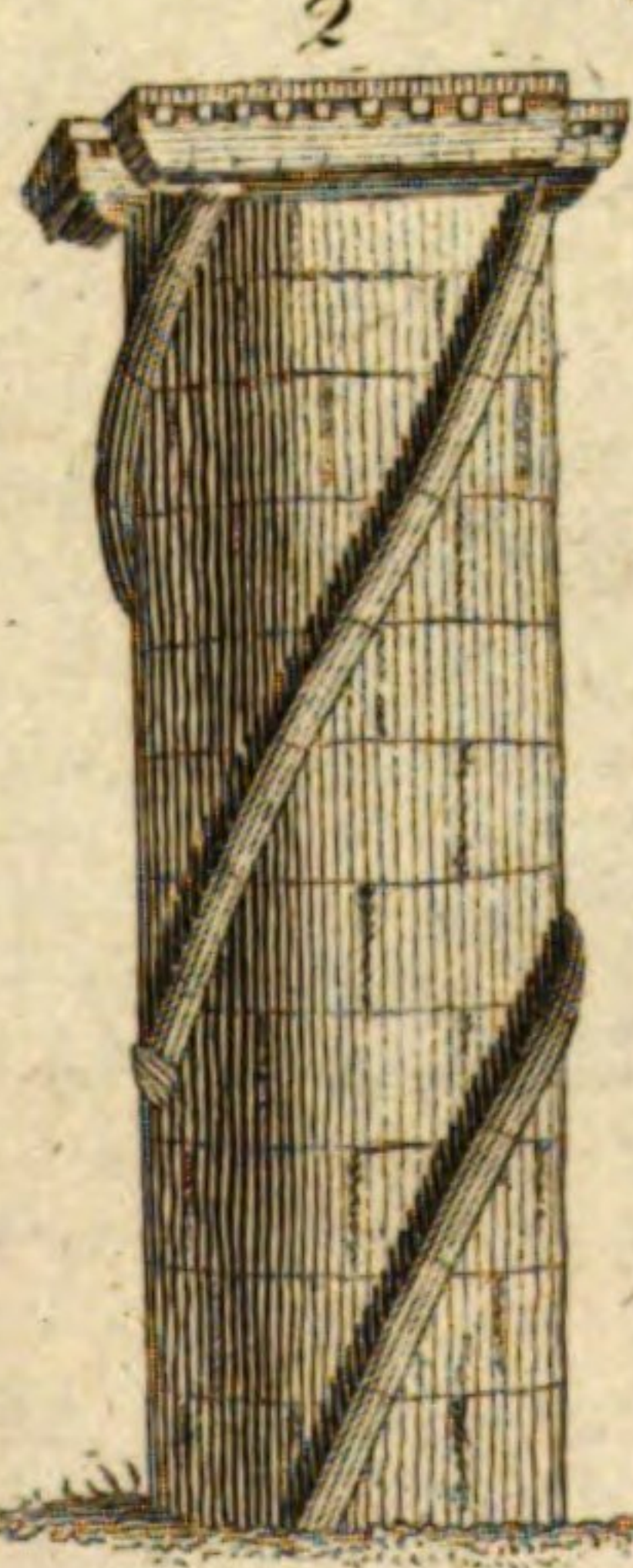
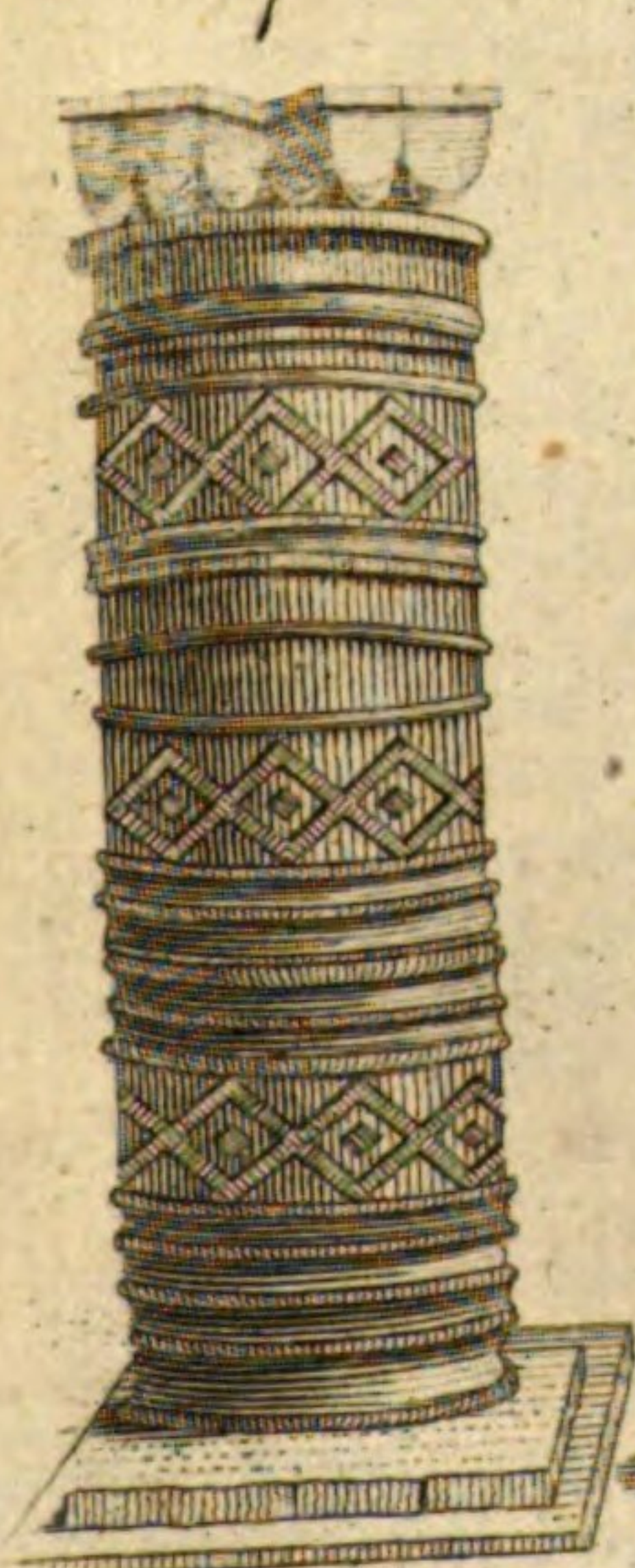
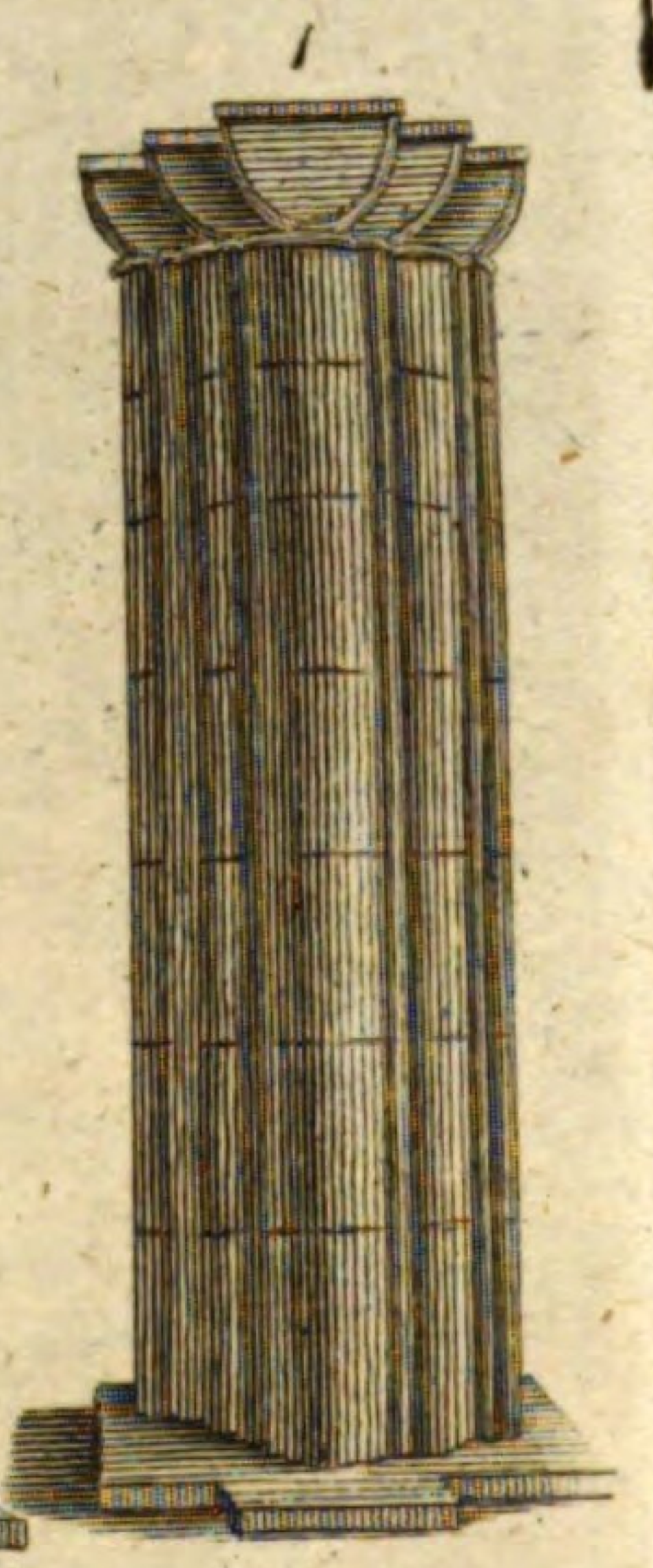
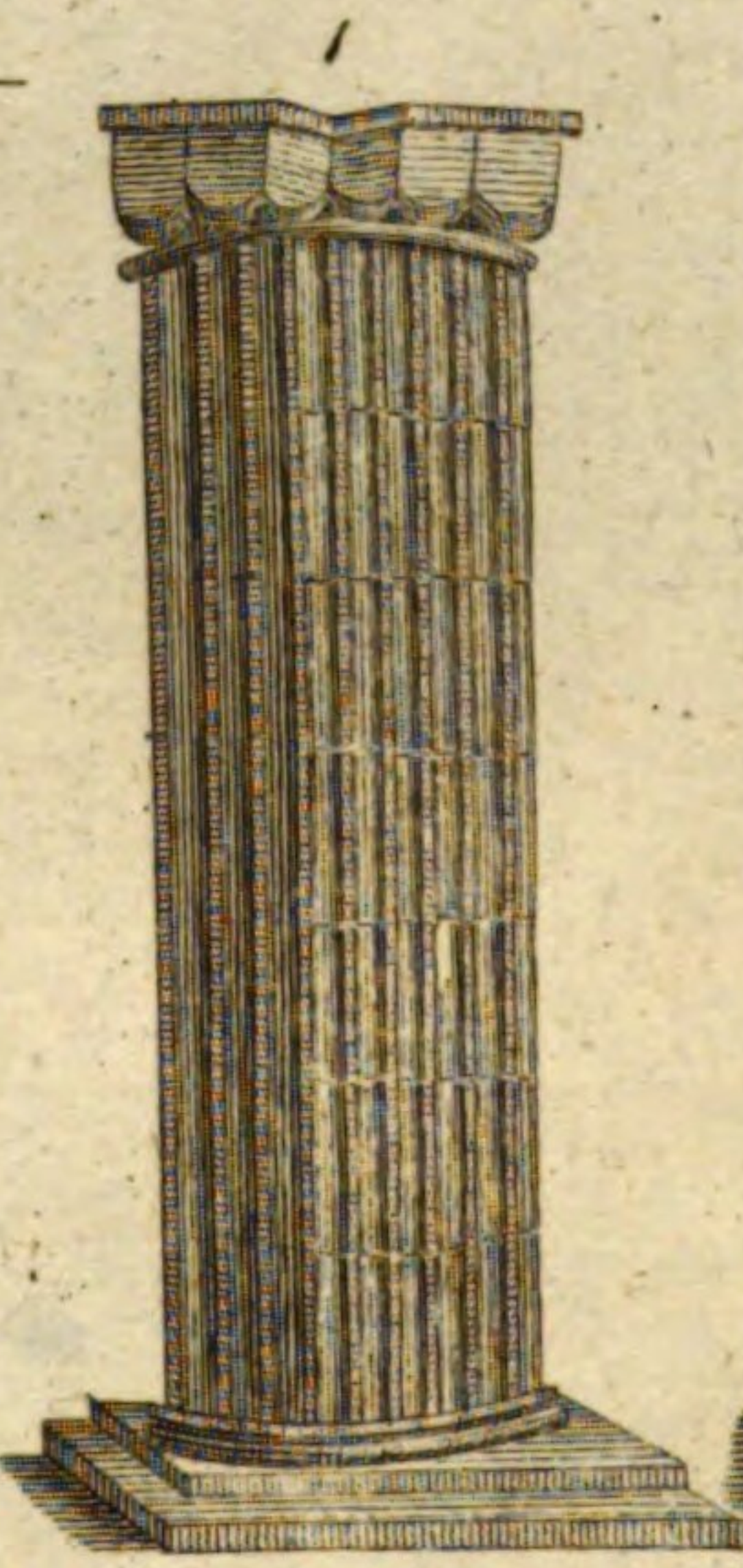
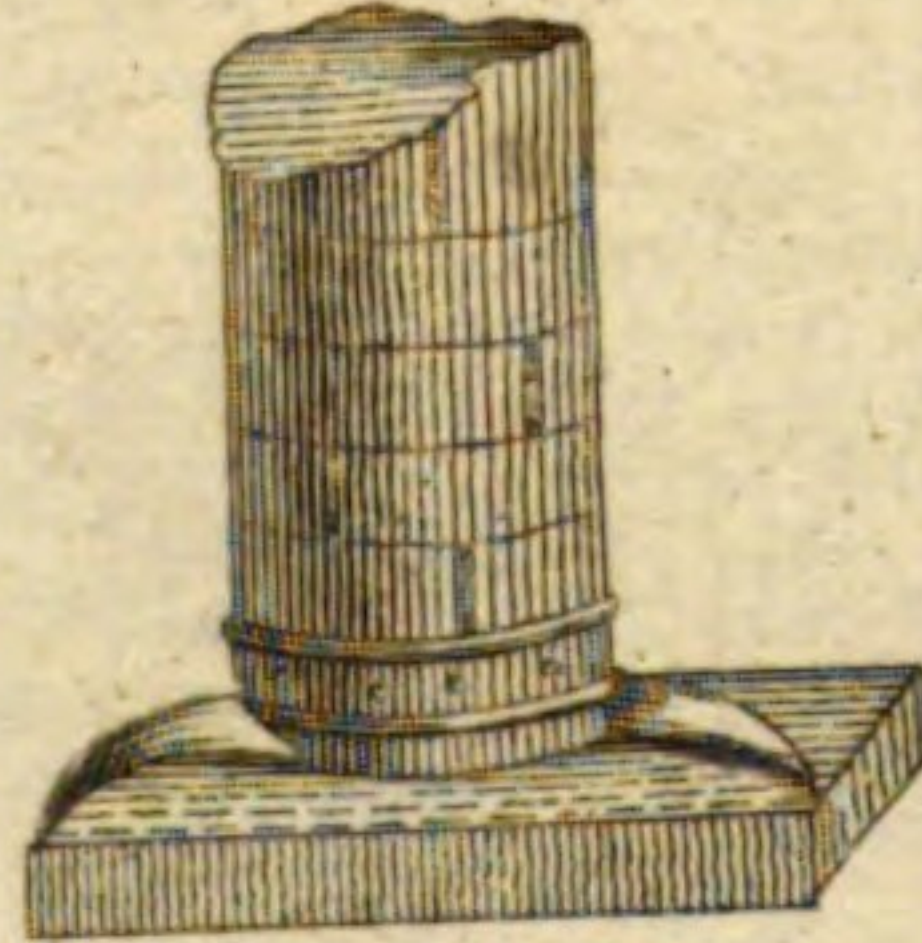
Common Gothic Arch.



Gothic Column



4



to Ely House, London, except that which is filled up there by the great window: in the tomb is an open pointed arch, where also the columns or pinnacles on each side are higher in proportion."

As to the supposition that this kind of architecture was brought into Spain by the Moors (who possessed themselves of a great part of that country the beginning of the eighth century, which they held till the latter end of the fifteenth), and that from thence, by way of France, it was introduced into Britain; this at first seems plausible: though according to Mr Grose, the only instance which seems to corroborate this hypothesis, or at least the only one proved by authentic drawings, is the mosque at Cordua in Spain; where, if we may judge from the views published by Mr Swinburn, although most of the arches are circular or horse-shoe fashion, there are some pointed arches formed by the intersection of two segments of a circle. This mosque was, as it is there said, begun by Abdoulrahman I. who laid the foundation two years before his death, and was finished by his son Hisslem, or Isean, about the year 800. If these arches were part of the original structure, it would be much in favour of the supposition; but as it is also said that edifice has been more than once altered and enlarged by the Mahometans, before any well-grounded conclusion can be drawn, it is necessary to ascertain the date of the present building.

There are also several pointed arches in the Moorish palace at Grenada, called the Alhambra; but as that was not built till the year 1273, long after the introduction of pointed arches into Europe, they are as likely to be borrowed by the Moors from the Christians, as by the Christians from the Moors. The greatest peculiarity in the Moorish architecture is the horse-hoe arch, which containing more than a semicircle, contracts towards its base, by which it is rendered unfit to bear any considerable weight, being solely calculated for ornament. In Romsey church, Hampshire, there are several arches somewhat of that form.

The drawings of the Moorish buildings given in *Les Delices de l'Espagne*, said to be faithful representations, there are no traces of the style called Gothic architecture: there, as well as in the Moorish castle at Gibraltar, the arches are all represented circular. Perhaps a more general knowledge of these buildings would throw some light on the subject: possibly the Moors may, like us, at different periods have used different manners of building.

The marks which constitute the character of Gothic, or Saracenic architecture, are its numerous and prominent buttresses, its lofty spires and pinnacles, its large and ramified windows, its ornamental niches or canopies, its sculptured saints, the delicate lace-work of its fretted roofs, and the profusion of ornaments lavished indiscriminately over the whole building: but its peculiar distinguishing characteristics are, the small clustered pillars and pointed arches formed by the segments of two intersecting circles; which arches, though last brought into use, are evidently of more simple and obvious construction than the semicircular ones; two flat stones, with their tops inclined to each other, and touching, form its rudiments; a number of boughs stuck into the ground opposite each other, and tied to-

6

gether at the top, in order to form a bower, exactly describe it: whereas a semicircular arch appears the result of deeper contrivance, as consisting of more parts; and it seems less probable chance, from whence all these inventions were first derived, should throw several wedge-like stones between two set perpendicular, so as exactly to fit and fill up the interval.

Bishop Warburton, in his notes on Pope's Epistles, in the octavo edition, has the following ingenious observations on this subject:—"Our Gothic ancestors had juster and manlier notions of magnificence, on Greek and Roman ideas, than these mimics of taste, who profess to study only classic elegance; and because the thing does honour to the genius of these barbarians, I shall endeavour to explain it. All our ancient churches are called without distinction Gothic, but erroneously. They are of two sorts; the one built in the Saxon times, the other in the Norman. Several cathedral and collegiate churches of the first sort are yet remaining, either in whole or in part; of which this was the original: When the Saxon kings became Christians, their piety (which was the piety of the times) consisted chiefly in building churches at home, and performing pilgrimages abroad, especially to the Holy Land; and these spiritual exercises assisted and supported one another; for the most venerable as well as most elegant models of religious edifices were then in Palestine. From these the Saxon builders took the whole of their ideas, as may be seen by comparing the drawings which travellers have given us of the churches yet standing in that country, with the Saxon remains of what we find at home; and particularly in that sameness of style in the latter religious edifices of the knights temporals (professedly built upon the model of the church of the Holy Sepulchre at Jerusalem), with the earlier remains of our Saxon edifices. Now the architecture of the Holy Land was Grecian, but greatly fallen from its ancient elegance. Our Saxon performance was indeed a bad copy of it, and as much inferior to the works of St Helene and Justinian, as theirs were to the Grecian models they had followed: yet still the footsteps of ancient art appeared in the circular arches, the entire columns, the division of the entablature into a sort of architrave, frieze, and cornice, and a solidity equally diffused over the whole mass. This, by way of distinction, I would call the Saxon architecture. But our Norman works had a very different original. When the Goths had conquered Spain, and the genial warmth of the climate and the religion of the old inhabitants had ripened their wits and inflamed their mistaken piety, both kept in exercise by the neighbourhood of the Saracens, through emulation of their service, and aversion to their superstition, they struck out a new species of architecture, unknown to Greece and Rome, upon original principles, and ideas much nobler than what had given birth even to classical magnificence. For this northern people having been accustomed, during the gloom of paganism, to worship the deity in groves (a practice common to all nations); when their new religion required covered edifices, they ingeniously projected to make them resemble groves, as nearly as the distance of architecture would permit; at once indulging their old prejudices, and providing for their present conveniences.

niences, by a cool receptacle in a sultry climate: and with what skill and success they executed the project by the assistance of Saracen architects, whose exotic style of building very luckily suited their purpose, appears from hence, that no attentive observer ever viewed a regular avenue of well grown trees intermixing their branches overhead, but it presently put him in mind of the long vista through the Gothic cathedral; or even entered one of the larger and more elegant edifices of this kind, but it presented to his imagination an avenue of trees; and this alone is what can be truly called the Gothic style of building. Under this idea of so extraordinary a species of architecture, all the irregular transgressions against art, all the monstrous offences against nature, disappear; every thing has its reason, every thing is in order, and an harmonious whole arises from the studious application of means proper and proportionate to the end. For could the arches be otherwise than pointed, when the workmen were to imitate that curve which branches of two opposite trees make by their insertion with one another? or could the columns be otherwise than split into distinct shafts, when they were to represent the stems of a clump of trees growing close together? On the same principles they formed the spreading ramification of the stone-work in the windows, and the stained glass in the interstices; the one to represent the branches, and the other the leaves of an opening grove, and both concurred to preserve that gloomy light which inspires religious reverence and dread. Lastly, we see the reason of their studied aversion to apparent solidity in these stupendous masses, deemed so absurd by men accustomed to the apparent as well as real strength of Grecian architecture. Had it been only a wanton exercise of the artist's skill, to show he could give real strength without the appearance of any, we might indeed admire his superior science, but we must needs condemn his ill judgment. But when one considers, that this surprising lightness was necessary to complete the execution of his idea of a sylvan place of worship, one cannot sufficiently admire the ingenuity of the contrivance. This too will account for the contrary qualities in what I call the Saxon architecture. These artists copied, as has been said, from the churches in the Holy Land, which were built on the models of the Grecian architecture, but corrupted by prevailing barbarism; and still farther depraved by a religious idea. The first places of Christian worship were sepulchres and subterraneous caverns, low and heavy from necessity. When Christianity became the religion of the state, and sumptuous temples began to be erected, they yet, in regard to the first pious ages, preserved the massive style, made still more venerable by the church of the Holy Sepulchre; where this style was, on a double account, followed and aggravated."

22
Rise and
progress of
architec-
ture in Bri-
tain.

In Britain, before the Roman invasion, the natives appear to have had no better lodgings than thickets, dens, and caves. Some of these caves, which were their winter-habitations, and places of retreat in time of war, were formed and rendered secure and warm by art, like those of the ancient Germans, which are thus described by Tacitus: "They are used to dig deep caves in the ground and cover them with earth, where they lay up their provisions, and dwell in winter for the sake of warmth. Into those they retire also from their

enemies, who plunder the open country, but cannot discover these subterranean recesses." Some of the subterraneous, or *earth-houses*, as they are called, are still remaining in the western isles of Scotland and in Cornwall. The summer habitations of the most ancient Britons were very slight; and, like those of the Finians, consisted only of a few stakes driven into the ground, interwoven with wattles, and covered over with the boughs of trees.

When Julius Cæsar invaded Britain, the inhabitants of Cantium (Kent), and of some other parts in the south, had learned to build houses a little more substantial and convenient. "The country (says Cæsar) abounds in houses which very much resemble those of Gaul". The first step towards this improvement seems to have been that of daubing the wattled walls of their houses with clay to fill up the chinks and make them warmer. "The Germans used for this purpose a kind of pure resplendent earth of different colours, which had an appearance of painting at a distance;" but the Gauls and Britons chose rather to whitewash the clay after it was dry with chalk. Instead of the boughs of trees, they thatched these houses with straw, as a much better security against the weather. They next proceeded to form the walls of large beams of wood, instead of stakes and wattles. This seems to have been the mode of building in Britain when it was first invaded by the Romans. "The Britons (says Diodorus Siculus, who was cotemporary with Cæsar) dwell in wretched cottages, which are constructed of wood, covered with straw." These wooden houses of the ancient Gauls and Britons were not square but circular, with high tapering roofs, at the top or centre of which was an aperture for the admission of light and emission of smoke. Those of Gaul are thus described by Strabo: "They build their houses of wood, in the form of a circle, with lofty tapering roofs." The foundations of some of the most magnificent of these circular houses were of stone, of which there are some vestiges still remaining in Anglesey and other places. It was probably in imitation of these wooden houses, that the most ancient stone edifices, of which there are still some remains in the western islands of Scotland, were built circular, and have a large aperture at the top.

When the Britons were invaded by the Romans, they had nothing among them answering to our ideas of a city or town, consisting of a great number of contiguous houses, disposed into regular streets, lanes, and courts. Their dwellings, like those of the ancient Germans, were scattered about the country, and generally situated on the brink of some rivulet for the sake of water, and on the skirt of some wood or forest for the convenience of hunting and pasture for their cattle. As these inviting circumstances were more conspicuous in some parts of the country than others, the princes and chiefs made choice of these places for their residence; and a number of their friends and followers, for various reasons, built their houses as near to them as they could with convenience. This naturally produced an ancient British town, which is described by Cæsar and Strabo in the following manner: "From the Cassi he learnt that the town of Cassivelaun was at no great distance: a place defended by woods and marshes, in which very great numbers of men and cattle were collected. For what the Britons call a town,

is a tract of woody country, surrounded by a mound and ditch, for the security of themselves and their cattle against the incursions of their enemies." "The forests of the Britons are their cities; for when they have inclosed a very large circuit with felled trees, they build within it houses for themselves and hovels for their cattle. These buildings are very slight, and not designed for long duration." The palaces of the British princes were probably built of the same materials, and on the same plan, with the houses of their subjects, and differed from them only in solidity and magnitude.

Though the communication between this island and the Continent was more free and open after the first Roman invasion than it had been before, and some of the British princes and chieftains even visited Rome, then in its greatest glory; it doth not appear that the people of Britain made any considerable improvements in their manner of building for at least a hundred years after that invasion. For when the renowned Caractacus was carried prisoner to Rome, A. D. 52, and observed the beauty and magnificence of the buildings in that proud metropolis of the world, he is said to have expressed great surprise, "That the Romans, who had such magnificent palaces of their own, should envy the wretched cabins of the Britons."

It must appear very surprising that the ancient Britons, when they were so ignorant of architecture, were capable of erecting (if indeed it was erected by them) so stupendous a fabric as that of Stonehenge on Salisbury plain: A fabric which hath been the admiration of all succeeding ages, and hath outlasted all the solid and noble structures which were erected by the Romans in this island. See the article *STONEHENGE*.

Of another very extraordinary species of building several remains are found in the Highlands of Scotland. They consist of ruins; the walls of which, instead of being cemented with lime or some other similar substance, or of being raised with dry stones, as was the method before cement came into use, are described as having been vetrified, or the stones run and compacted together by the force of fire. Concerning the origin, use, &c. of these buildings, different opinions have been formed; and even the reality of them as works of contrivance has been called in question: of all which particulars the reader will find an account under the article *FORTS (Vitrified)*.

But for whatever purposes, or by whatever means, the above and other similar structures of a peculiar nature were erected, we have sufficient evidence that the people of Britain, before they were subdued and instructed by the Romans, had but a rude knowledge of architecture, and were very meanly lodged. As soon, however, as the Romans began to form settlements and plant colonies in this island, a sudden and surprising change ensued in the state of architecture. For that wonderful people were as industrious as they were brave, and made haste to adorn every country that they conquered. The first Roman colony was planted at Camulodunum, A. D. 50; and when it was destroyed by the Britons in their great revolt under Boadicia, only eleven years after, it appears to have been a large and well built town, adorned with statues, temples, theatres, and other public edifices.

The Romans not only built a prodigious number of solid, convenient, and magnificent structures for their

own accommodation, but they exhorted, encouraged, and instructed the Britons to imitate their example. This was one of the arts which Agricola, the most excellent of the Roman governors, employed to civilize the Britons, and reconcile them to the Roman government. "The following winter (says Tacitus) was spent by Agricola in very salutary measures. That the Britons who led a roaming and unsettled life, and were easily intigated to war, might contract a love to peace and tranquillity, by being accustomed to a more pleasant way of living, he exhorted and assisted them to build houses, temples, courts, and market-places. By praising the diligent and reproaching the indolent, he excited so great an emulation among the Britons, that after they had erected all those necessary edifices in their towns, they proceeded to build others merely for ornament and pleasure, as porticoes, galleries, baths, banqueting-houses, &c." From this time, which was A. D. 80, to the middle of the fourth century, architecture and all the arts immediately connected with it greatly flourished in this island; and the same taste for erecting solid, convenient, and beautiful buildings, which had long prevailed in Italy, was introduced into Britain. Every Roman colony and free city (of which there was a great number in this country) was a little Rome, encompassed with strong walls, adorned with temples, palaces, courts, halls, basilisks, baths, markets, aqueducts, and many other fine buildings, both for use and ornament. The country every where abounded with well-built villages, towns, forts, and stations; and the whole was defended by that high and strong wall, with its many towers and castles, which reached from the mouth of the river Tine on the east to the Solway Frith on the west. This spirit of building, which was introduced and encouraged by the Romans, so much improved the taste and increased the number of the British builders, that in the third century this island was famous for the great number and excellence of its architects and artificers. When the emperor Constantius, father of Constantine the Great, rebuilt the city of Autun in Gaul, A. D. 296, he was chiefly furnished with workmen from Britain, "which (says Eumenius) very much abounded with the best artificers."

Not very long after this period, architecture and all the arts connected with it began to decline very sensibly in Britain, and in all the provinces of the western empire. This was partly owing to the building of Constantinople, which drew many of the most famous architects and other artificers into the east, and partly to the irruptions and depredations of the barbarous nations.

The final departure of the Romans was followed by the almost total destruction of architecture in this island. For the unhappy and unwarlike people whom they left behind, having neither skill nor courage to defend the numerous towns, forts, and cities which they possessed, they were seized by their ferocious invaders, who first plundered and then destroyed them. By this means, the many noble structures with which Provincial Britain had been adorned by the art and industry of the Romans, were ruined or defaced in a very little time; and the unfortunate Britons were quite incapable of repairing them, or of building others in their room. That long succession of miseries in which they were in-

volved by the Scots, Picts, and Saxons, deprived them of the many useful arts which they had learned from their former masters, and lodged them once more in forests, dens, and caves, like their savage ancestors.

The most wanton and extensive devastations were those committed by the Anglo-Saxons; among whom it seems to have been a maxim to destroy all the towns and castles which they took from their enemies, instead of preserving them for their own use.

It cannot be supposed, that a people who wantonly demolished so many beautiful and useful structures had any taste for the arts by which they had been erected. The truth is, that the Anglo-Saxons at their arrival in this island were almost totally ignorant of these arts; and, like all the other nations of Germany, had been accustomed to live in wretched hovels, built of wood or earth, and covered with straw or the branches of trees: nor did they much improve in the knowledge of architecture for 200 years after their arrival. During that period, masonry was quite unknown and unpractised in this island; and the walls even of cathedral churches were built of wood. "There was a time (says venerable Bede) when there was not a stone church in all the land; but the custom was to build them all of wood. Finan, the second bishop of Lindisfarne, or Holy Island, built a church in that island, A. D. 652, for a cathedral, which yet was not of stone, but of wood, and covered with reeds; and so it continued till Eadbert, the successor of St Cuthbert, and seventh bishop of Lindisfarne, took away the reeds and covered it all over, both roof and walls, with sheets of lead." The first cathedral of York was built of the same materials; and a church of stone was esteemed a kind of prodigy in those times that merited a place in history. "Paulinus, the first bishop of York, built a church of stone in the city of Lincoln, whose walls (says Bede) are still standing, though the roof is fallen down; and some healing miracles are wrought in it every year, for the benefit of those who have the faith to seek them."

There does not seem to have been so much as one church of stone, nor any artists who could build one in all Scotland, at the beginning of the eighth century. For Naitan king of the Picts, in his famous letter to Ceolfred abbot of Weremouth, A. D. 710, earnestly intreats him to send him some masons to build a church of stone in his kingdom, in imitation of the Romans; which he promises to dedicate to the honour of the apostle Peter, to whom the abbey of Weremouth was dedicated: and we are told by Bede, who was then living in that abbey, that the reverend abbot Ceolfred granted this pious request, and sent masons according to his desire.

Masonry was restored, and some other arts connected with it introduced into England, towards the end of the seventh century, by two clergymen, who were great travellers, and had often visited Rome, where they had acquired some taste for these arts. These were, the famous Wilfrid bishop of York, and afterwards of Hexham, and Benedict Biscop, founder of the abbey of Weremouth. Wilfrid, who was one of the most ingenious, active, and magnificent prelates of the seventh century, was a great builder, and erected several structures at York, Rippon, and Hexham, which were the admiration of the age in which he

flourished. The cathedral of Hexham, which was one of these structures, is thus described by his biographer; "Having obtained a piece of ground at Hexham from Queen Etheldreda, he there founded a most magnificent church, which he dedicated to the blessed apostle St Andrew. As the plan of this sacred structure seems to have been inspired by the Spirit of God, it would require a genius much superior to mine to describe it properly. How large and strong were the subterraneous buildings, constructed of the finest polished stones! How magnificent the superstructure, with its lofty roof, supported by many pillars, its long and high walls, its sublime towers, and winding stairs! In one word, there is no church on this side of the Alps so great and beautiful." This admired edifice, of which some vestiges are still remaining, was built by masons and other artificers brought from Rome by the munificence of its generous founder. Benedict Biscop was the cotemporary and companion of Wilfrid in some of his journeys, and had the same taste for the arts. He made no fewer than six journeys to Rome, chiefly with a view of collecting books, pictures, statues, and other curiosities, and of persuading artificers of various kinds to come from Italy and France and settle in England. Having obtained a grant of a considerable estate from Egfrid king of Northumberland, near the mouth of the river Were, he there founded a monastery, A. D. 672. "About a year after the foundations of this monastery were laid, Benedict crossed the sea into France, where he collected a number of masons, and brought them over with him, in order to build the church of his monastery of stone after the Roman manner, of which he was a great admirer. His love to the apostle Peter, to whom he designed to dedicate his church, made him urge these workmen to labour so hard, that mass was celebrated in it about a year after it was founded. When the work was far advanced, he sent agents into France to procure if possible some glass-makers, a kind of artificers quite unknown in England, and to bring them over to glaze the windows of his church and monastery. These agents were successful, and brought several glass-makers with them; who not only performed the work required by Benedict, but instructed the English in the art of making glass for windows, lamps, drinking-vessels, and other uses."

But though these arts of building edifices of stone, with windows of glass and other ornaments, were thus introduced by these two prelates in the latter part of the seventh century, they do not seem to have flourished much for several centuries. It appears from many incidental hints in our ancient historians, that stone buildings were still very rare in the eighth and ninth ages: and that when any such buildings were erected, they were the objects of much admiration. When Alfred the Great, towards the end of the ninth century, formed the design of rebuilding his ruined cities, churches, and monasteries, and of adorning his dominions with more magnificent structures, he was obliged to bring many of his artificers from foreign countries. "Of these (as we are told by his friend and companion Asserius) he had an almost innumerable multitude, collected from different nations; many of them the most excellent in their several arts."

In the other parts of this island architecture was, as might

*Eddi Vita
Wilfridi,
c. 22.*

*Bede Hist.
Abbat.*

might naturally be imagined, in a still less flourishing state. It appears indeed to have been almost entirely lost among the posterity of the ancient Britons after they retired to the mountains of Wales. The chief palace of the kings of Wales, where the nobility and wise men assembled for making laws, was called the *white palace*, because the walls of it were woven with white wands which had the bark peeled off. By the laws of Wales, whoever burnt or destroyed the king's hall or palace was obliged to pay one pound and eighty pence, besides one hundred and twenty pence for each of the adjacent buildings, which were eight in number; viz. the dormitory, the kitchen, the chapel, the granary, the bake-house, the store-house, the stable, and the dog-house. From hence it appears, that a royal residence in Wales, with all its offices, when these laws were made, was valued at five pounds and eighty pence of the money of that age, equal in quantity of silver to sixteen pounds of our money, and in efficacy to one hundred and sixty. This is certainly a sufficient proof of the meanness of those buildings which were only of wood. Even the castles in Wales, in this period, that were built for the security of the country, appear to have been constructed of the same materials; for the laws required the king's vassals to come to the building of these castles with no other tools but an axe.

The arts of building do not seem to have been much better understood by the Scots and Picts than by the ancient Britons in the former part of this period. When Finan, the second bishop of Lindisfarne, built a church of wood in that island, A. D. 652, he is said to have done it *more Scotorum*, after the manner of his countrymen the Scots; and it hath been already observed, that Naitan king of the Picts was obliged to bring masons from Northumberland when he resolved to build a church of stone in his dominions, A. D. 710. After this last period, it is probable that the Picts, and perhaps the Scots, began to learn and practise the art of masonry; because there are still some stone buildings of a very singular construction, and great antiquity, to be seen in Scotland. These buildings are all circular; though of two kinds so different from each other, that they seem to be the works of different ages and of different nations. The largest of these structures are in a very extraordinary taste of architecture; and are thus described by a modern antiquary, who viewed them with no little attention: "Having arrived at the barrack of Glenelg, I was conducted to the remains of those stupendous fabrics, seated about two miles from thence, in a valley called *Glenbeg*, in which four of them anciently stood. Two of these are now almost quite demolished, the third is half fallen down, the fourth is almost entire. The first I met with lies towards the north side of the valley, and is called *Castle Chalamine*, or *Malcom's Castle*. It stands upon a considerable eminence, and affords us a fine prospect of the island of Sky and a good part of the sea-coast. The foundation of this only appears; as also of that other, on the east end of the valley, called *Castle Chonnel*. About a quarter of a mile further, upon the bank of a rivulet which passes through the middle of the glen, stands the third fabric, called *Castle Tellwe*. I found it composed of stones without cement; not laid in regular courses, after the manner of elegant buildings, but rudely and without order. Those to-

ward the base were pretty large, but ascending higher they were thin and flat, some of them scarce exceeding the thickness of an ordinary brick. I was surprised to find no windows on the outside, nor any manner of entrance into the fabric, except a hole towards the west, at the base, so very long and narrow, that I was forced to creep in upon hands and knees, and found that it carried me down four or five steps below the surface of the ground. When I was got within, I was environed betwixt two walls, having a cavity or void space which led me round the whole building. Opposite to the little entry on the outside was a pretty large door in the second or inner wall, which let me into the area or inner court. When I was there, I perceived that one half of the building was fallen down, and thereby had the opportunity of seeing a complete section thereof. The two walls join together at the top, round about, and have formed a large void space or area in the middle. But to give a more complete idea of these buildings, I shall describe the fourth, called *Castle Troddan*, which is by far the most entire of any in that country, and from whence I had a very clear notion how these fabrics were originally contrived. On the outside were no windows, nor were the materials of this castle any wise different from those of the other already described, only the entry on the outside was somewhat larger; but this might be occasioned by the falling of the stones from above. The area of this makes a complete circle; and there are four doors in the inner wall, which face the four cardinal points of the compass. These doors are each eight feet and a half high, and five feet wide, and lead from the area into the cavity between the two walls, which runs round the whole building. The perpendicular height of this fabric is exactly 33 feet; the thickness of both walls, including the cavity between, no more than 12 feet; and the cavity itself is hardly wide enough for two men to walk abreast: the external circumference is 178 feet. The whole height of the fabric is divided into four parts or stories, separated from each other by thin floorings of flat stones, which knit the two walls together, and run quite round the building; and there have been winding stairs of the same flat stones ascending betwixt wall and wall up to the top. The undermost partition is somewhat below the surface of the ground, and is the widest; the others grow narrower by degrees till the walls close at the top. Over each door are nine square windows, in a direct line above each other, for the admission of light; and between every row of windows are three others in the uppermost story, rising above a cornice which projects out from the inner wall and runs round the fabric." From this description of these singular edifices, it plainly appears that they were designed both for lodging and defence; and considering the state of the times in which they were built, they were certainly very well contrived for answering both these purposes.

The stone edifices of the other kind which were probably erected in this period, and of which some few are still to be seen in Scotland, are not so large as the former, but more artificial. They are slender, lofty, circular towers, of cut stone, laid in regular rows, between 40 and 50 feet in external circumference, and from 70 to 100 feet high, with one door some feet from the ground. They are exactly similar to the

Archæologia, vol. i.
p. 307.

round tower of Ardmore, and several others, in Ireland: and therefore were probably built about the same time, which was in the tenth century, and for the same purposes; which are believed by some to have been for the confinement of penitents while they were performing penance. On this account these towers are always found in the neighbourhood of churches both in Scotland and Ireland; and are said to have been used in this manner: "The penitents were placed in the uppermost story of the tower (which commonly consisted of five or six stories); where having made probation, or done penance, such a limited time, according to the heinousness of their crimes, they then were permitted to descend to the next floor, and so on by degrees until they came to the door, which always faced the entrance of the church, where they stood to receive absolution from the clergy, and the blessings of the people." A tedious process, to which few penitents in the present age would willingly submit. Other writers are of opinion, that the design of these circular towers (of which one is still remaining at Abernethy and another at Brechin) was to be places from whence the people were called to public worship by the sound of a horn or trumpet, before the introduction of bells.

This art received very great improvements in the 12th century; which indeed may be called *the age of architecture*; when the rage for building was more violent in England than at any other time. The great and general improvements that were made in the fabrics of houses and churches in the first years of this century, are thus described by a cotemporary writer.

Oræris Vital. Hist. Ecclæs.
p. 788.

"The new cathedrals and innumerable churches that were built in all parts, together with the many magnificent cloisters and monasteries, and other apartments of monks, that were then erected, afford a sufficient proof of the great felicity of England in the reign of Henry I. The religious of every order, enjoying peace and prosperity, displayed the most astonishing ardour in every thing that might increase the splendor of divine worship. The fervent zeal of the faithful prompted them to pull down houses and churches every where, and rebuild them in a better manner. By this means the ancient edifices that had been raised in the days of Edgar, Edward, and other Christian kings, were demolished, and others of greater magnitude and magnificence, and of more elegant workmanship, were erected in their room, to the glory of God."

As the prodigious power of religious zeal, whatever turn it happens to take, when it is thoroughly heated, is well known, it may not be improper to give one example of the arts employed by the clergy and monks of this period, to inflame the pious ardour of the kings, nobles, and people, for building and adorning churches. When Joffred Abbot of Croyland resolved to rebuild the church of his monastery in a most magnificent manner, A. D. 1106, he obtained from the Archbishops of Canterbury and York a bull, dispensing with the third part of all penances for sin to those who contributed any thing towards the building of that church. This bull was directed not only to the king and people of England, but to the kings of France and Scotland, and to all other kings, earls, barons, archbishops, bishops, abbots, priors, rectors, presbyters, and clerks, and to all true believers in Christ,

rich and poor, in all Christian kingdoms. To make the best use of this bull, he sent two of his most eloquent monks to proclaim it over all France and Flanders, two other monks into Scotland, two into Denmark and Norway, two into Wales, Cornwall, and Ireland, and others into different parts of England. "By this means (says the historian) the wonderful benefits granted to all the contributors to the building of this church were published to the very ends of the earth; and great heaps of treasure and masses of yellow metal flowed in from all countries upon the venerable Abbot Joffred, and encouraged him to lay the foundation of his church." Having spent about four years in collecting mountains of different kinds of marble from quarries both at home and abroad, together with great quantities of lime, iron, brass, and other materials for building, he fixed a day for the great ceremony of laying the foundation, which he contrived to make a very effectual mean of raising the superstructure: For on the long-expected day, the feast of the Holy Virgins Felicitas and Perpetua, an immense multitude of earls, barons, and knights, with their ladies and families, of abbots, priors, monks, nuns, clerks, and persons of all ranks, arrived at Croyland, to assist at this ceremony. The pious Abbot Joffred began by saying certain prayers and shedding a flood of tears on the foundation. Then each of the earls, barons, knights, with their ladies, sons, and daughters, the abbots, clerks, and others, laid a stone, and upon it deposited a sum of money, a grant of lands, tithes, or patronages, or a promise of stone, lime, wood, labour, or carriages, for building the church. After this the Abbot entertained the whole company, amounting to 5000 persons, at dinner. To this entertainment they were all intitled; for the money, and grants of different kinds, which they had deposited on the foundation-stones, were alone sufficient to have raised a very noble fabric. By such arts as these the clergy inspired kings, nobles, and people of all ranks, with so ardent a spirit for these pious works, that in the course of this period almost all the sacred edifices in England were rebuilt, and many hundreds of new ones raised from the foundation. Nor was this spirit confined to England, but prevailed as much in Scotland in proportion to its extent and riches. King David I. alone, besides several cathedrals and other churches, built no fewer than thirteen abbeys and priories, some of which were very magnificent structures.

The sacred architecture of the Anglo-Normans in the beginning of this period did not differ much in its style and manner from that of the Anglo-Saxons: their churches being in general plain, low, strong, and dark; the arches both of the doors and windows semicircular, with few or no ornaments. By degrees, through much practice, our architects, who were all monks or clergymen, improved in their taste and skill, and ventured to form plans of more noble, light, and elevated structures, with a great variety of ornaments; which led to that bold magnificent style of building, commonly, though perhaps not very properly, called *the later Gothic*. It is not improbable that our monkish architects were assisted in attaining this style of building by models from foreign countries, or by instructions from such of their own number as had visited Italy, France, Spain, or the East. But the origin of

of this style of architecture has been already considered, and the characters by which it is distinguished from the ancient Gothic have also been described: (See n^o 21. *supra*.) Its first appearance in England was towards the latter end of the reign of king Henry II. But it was not at once thoroughly adopted; some short solid columns and semicircular arches being retained and mixed with the pointed ones; as for example, in the west end of the Old Temple Church; and at York, where under the choir there remains much of the ancient work, the arches of which are but just pointed and rise on short round pillars. In the reign of Henry III. however, this manner of building seems to have gained a complete footing; the circular giving place to the pointed arch, and the massive column yielding to the slender pillar. Indeed, like all novelties, when once admitted, the rage of fashion made it become so prevalent, that many of the ancient and solid buildings, erected in former ages, were taken down in order to be re-edified in the new taste, or had additions patched to them, of this mode of architecture. The present cathedral church of Salisbury was begun early in this reign, and finished in the year 1258. It is entirely in the Saracenic style; and, according to Sir Christopher Wren, may be justly accounted one of the best patterns of architecture of the age in which it was built. Its excellency is undoubtedly in a great measure owing to its being constructed on one plan; whence arises that symmetry and agreement of parts, not to be met with in many of our other cathedral churches; which have mostly been built at different times, and in a variety of styles. From this time till the reign of Henry VIII. the fashionable pillars in churches were of Purbeic marble, very slender and round, encompassed with marble shafts a little detached, having each a capital adorned with foliage, which joining, formed one elegant capital for the whole pillar. The windows were long and narrow, with pointed arches and painted glass, which was introduced about that time, or at least became more common. In this century also they began to delight in lofty steeples, with spires and pinnacles. In the fourteenth century, the pillars consisted of an assemblage of shafts not detached, but united, forming one solid and elegant column; the windows, especially those in the east and west ends, were greatly enlarged, divided into several lights by stone mullions running into ramifications above, and forming numerous compartments in various fanciful shapes. Those windows, filled with stained glass of the most lively colours, representing kings, saints, and martyrs, and their histories, made a most solemn and glorious appearance. There were several other variations, especially in the taste of the carvings and other ornaments, which are too minute for general history.

As to the state of civil architecture during the same period: The houses of the common people in the country, and of the lower burghesses in towns and cities, were very little improved in their structure, that most numerous and useful order of men being much depressed in the times we are now delineating. Even in the capital city of London, all the houses of mechanics and common burghesses were built of wood, and covered with straw or reeds, towards the end of the twelfth century. But the palaces, or rather castles, of the Anglo-Norman kings, barons, and prelates, were very different from

the residences of persons of the same rank in the Anglo-Saxon times. For this we have the testimony of a person of undoubted credit, who was well acquainted with them both. "The Anglo-Saxon nobles (says William of Malmesbury) squandered away their ample revenues in low and mean houses; but the French and Norman barons are very different from them, living at less expence, but in great and magnificent palaces." The truth is, that the rage of building fortified castles, was no less violent among the Norman princes, prelates, and barons, than that of building churches. To this they were prompted not only by the custom of their native country, but also by their dangerous situation in this island. Surrounded by multitudes, whom they had depressed and plundered, and by whom they were abhorred, they could not think themselves safe without the protection of deep ditches and strong walls. The conqueror himself was sensible, that the want of fortified places in England had greatly facilitated his conquest, and might facilitate his expulsion; and therefore he made all possible haste to remedy this defect, by building very magnificent and strong castles in all the towns within the royal demesnes. "William (says Matthew Paris) excelled all his predecessors in building castles, and greatly harassed his subjects and vassals with these works." All his earls, barons, and even prelates, imitated his example; and it was the first care of every one who received the grant of an estate from the crown, to build a castle upon it for his defence and residence. The disputes about the succession in the following reigns, kept up this spirit for building great and strong castles. William Rufus was still a greater builder than his father. "This William (says Henry Knyghton) was much addicted to building royal castles and palaces, as the castles of Dover, Windsor, Norwich, Exeter, the palace of Westminster, and many others, testify; nor was there any king of England before him that erected so many and such noble edifices. Henry I. was also a great builder both of castles and monasteries. But this rage for building never prevailed so much in any period of the English history as in the turbulent reign of king Stephen, from A. D. 1135 to A. D. 1154. "In this reign (as we are told by the author of the Saxon Chronicle) every one who was able built a castle; so that the poor people were worn out with the toil of these buildings, and the whole kingdom was covered with castles." This last expression will hardly appear too strong, when we are informed, that besides all the castles before that time in England, no fewer than 1115 were raised from the foundation in the short space of 19 years. See the article CASTLE.

The castles, monasteries, and greater churches of this period, were generally covered with lead, the windows glazed; and when the walls were not of ashlar, they were neatly plastered, and whitewashed on both sides. The doors, floors, and roof, were commonly made of oak planks and beams, exactly smoothed and jointed, and frequently carved. It is hardly necessary to observe, that the building one of these great and magnificent castles, monasteries, or churches, of which there were many in England, must have been a work of prodigious expence and labour; and that the architects and artificers, by whom that work was planned and executed, must have attained considerable dexterity

dexterity in their respective arts. Several of these architects have obtained a place in history, and are highly celebrated for their superior skill. William of Sens, architect to Archbishop Lanfranc in building his cathedral, is said, by Gervase of Canterbury, to have been a most exquisite artist both in stone and wood. He made not only a model of the whole cathedral, but of every particular piece of sculpture and carving, for the direction of the workmen, and invented many curious machines for loading and unloading ships, and conveying heavy weights by land, because all the stones were brought from Normandy. Matthew Paris speaks even in a higher strain of Walter of Coventry, who flourished towards the end of this period, when he says, that "so excellent an architect had never yet appeared, and probably never would appear, in the world." This encomium was undoubtedly too high; but it is impossible to view the remains of many magnificent fabrics, both sacred and civil, that were erected in this period, without admiring the genius of the architects by whom they were planned, and the dexterity of the workmen by whom they were executed.

In the beginning of the reign of Henry VIII. or rather towards the latter end of that of Henry VII. when brick building became common, a new kind of low painted arch grew much in use: it was described from four centers, was very round at the haunches, and the angle at the top was very obtuse. This sort of arch is to be found in every one of Cardinal Wolsey's buildings; also at West Sheen; an ancient brick gate at Mile end, called *King John's Gate*; and in the great gate of the palace of Lambeth. From this time Gothic architecture began to decline; and was soon after supplanted by a mixed style, if one may venture to call it one; wherein the Grecian and Gothic, however discordant and irreconcilable, are jumbled together. Concerning this mode of building, Mr Warton, in his observations on Spencer's *Fairy Queen*, has the following anecdotes and remarks:

"Altho' the Roman or Grecian architecture did not begin to prevail in England till the time of Inigo Jones, yet our communication with the Italians, and our imitation of their manners, produced some specimens of that style much earlier. Perhaps the earliest was Somerset House in the Strand, built about the year 1549, by the Duke of Somerset, uncle to Edward VI. The monument of Bishop Gardiner, in Winchester cathedral, made in the reign of Mary, about 1555, is deco-

rated with Ionic pillars. These verses of Spencer,

Did rise
On stately pillars, fram'd after the Doric guise.

bear an allusion to some of the fashionable improvements in building, which at this time were growing more and more into esteem. Thus also Bishop Hall, who wrote about the same time, viz. 1598:

There findest thou some stately Doricke frame,
Or neat Ionicke work.

But these ornaments were often absurdly introduced into the old Gothic style: as in the magnificent portico of the schools at Oxford, erected about the year 1613; where the builder, in a Gothic edifice, has affectedly displayed his universal skill in the modern architecture, by giving us all the five orders together. However, most of the great buildings of Queen Elizabeth's reign have a style peculiar to themselves both in form and finishing; where, though much of the old Gothic is retained, and great part of the new taste is adopted, yet neither predominates; while both, thus distinctly blended, compose a fantastic species, hardly reducible to any class or name. One of its characteristics is the affectation of large and lofty windows: where, says Bacon, "you shall have sometimes fair houses so full of glass, that one cannot tell where to come to be out of the sun."

To return now to our general history, and to conclude: In the 15th and 16th centuries, when learning of all kinds began to revive, the chaste architecture of the Greeks and Romans seemed as it were to be recalled into life. The first improvements in it began in Italy, and owed their existence to the many ruins of the ancient Roman structures that were to be found in that country, from whence an improved method of building was gradually brought into the other countries of Europe: and though the Italians for a long time retained the superiority as architects over the other European nations; yet, as men of genius travelled from all quarters into Italy, where they had an opportunity of seeing the originals from whence the Italians copied, architects have arisen in other nations equal, if not superior, to any that ever appeared in Italy. Of this we have a recent instance in our own countryman Mr Mylne, who lately gained the prize in architecture at Rome, where it would no doubt be disputed by such natives of Italy as were best skilled in that art.

PART I. PRINCIPLES OF ARCHITECTURE.

MANY ages must have elapsed before architecture came to be considered as a fine art. Utility was its original destination, and still continues to be its principal end. Experience, however, has taught us, that architecture is capable of exciting a variety of agreeable feelings. Of these, utility, grandeur, regularity, order, and proportion, are the chief.

Distinction
of build-
ings.

Architecture, being an useful as well as a fine art, leads us to distinguish buildings, and parts of buildings, into three kinds, viz. what are intended for use solely, what for ornament solely, and what for both. Buildings intended for utility solely, ought in every part to correspond precisely to that intention: the least devia-

tion from use, though contributing to ornament, will be disagreeable; for every work of use being considered as a mean to an end, its perfection as a mean is the capital circumstance, and every other beauty in opposition is neglected as improper. On the other hand, in such things as are intended solely for ornament, as columns, obelisks, triumphal arches, &c. beauty alone ought to be regarded. The principal difficulty in architecture lies in combining use and ornament. In order to accomplish these ends, different and even opposite means must be employed; which is the reason why they are so seldom united in perfection; and hence, in buildings of this kind, the only practicable method is,

to

Principles. to prefer utility to ornament according to the character of the building: in palaces, and such buildings as admit of a variety of useful contrivance, regularity ought to be preferred; but in dwelling-houses that are too small for variety of contrivance, utility ought to prevail, neglecting regularity as far as it stands in opposition to convenience.

24
Intrinsic
and rela-
tive beau-
ty.

In considering attentively the beauty of visible objects, we discover two kinds. The first may be termed *intrinsic* beauty, because it is discovered in a single object, without relation to any other. The second may be termed *relative* beauty, being founded on a combination of relative objects. Architecture admits of both kinds. We shall first give a few examples of *relative* beauty.

The proportions of a door are determined by the use to which it is destined. The door of a dwelling-house, which ought to correspond to the human size, is confined to seven or eight feet in height and three or four in breadth. The proportions proper for a stable or coach-house are different. The door of a church ought to be wide, in order to afford an easy passage for a multitude; and its height must be regulated by its wideness, that the proportion may please the eye. The size of the windows ought always to be proportioned to that of the room they are destined to illuminate; for if the apertures be not large enough to convey light to every corner, the room must be unequally lighted, which is a great deformity. Steps of stairs should likewise be accommodated to the human figure, without regarding any other proportion; they are accordingly the same in large and in small buildings, because both are inhabited by men of the same size.

We shall next consider *intrinsic* beauty, blended with that which is *relative*. A cube itself is more agreeable than a parallelopipedon; this constantly holds in small figures: but a large building in the form of a cube is lumpish and heavy; while a parallelopipedon, set on its smaller base, is more agreeable on account of its elevation: Hence the beauty of Gothic towers. But if this figure were to be used in a dwelling house, to make way for relative beauty, we would immediately perceive that utility ought chiefly to be regarded; and this figure, inconvenient by its height, ought to be set on its larger base: the loftiness in this case would be lost; but that loss will be more than sufficiently compensated by the additional convenience. Hence the form of buildings spread more upon the ground than raised in height, is always preferred for a dwelling-house.

25
Internal di-
visions of
houses.

With regard to the internal divisions, utility requires that the rooms be rectangular, to avoid useless spaces. An hexagonal figure leaves no void spaces; but it determines the rooms to be all of one size, which is both inconvenient and disagreeable for want of variety. Though a cube be the most agreeable figure, and may answer for a room of a moderate size; yet, in a very large room, utility requires a different figure. Unconfined motion is the chief convenience of a great room; to obtain this the greatest length that can be had is necessary. But a square room of large size is inconvenient. It removes chairs, tables, &c. at too great a distance from the hand, which, when unemployed, must be ranged along the sides of the room. Utility, therefore, requires a large room to be a paral-

lelogram. This figure is likewise best calculated for the admission of light; because, to avoid cross-lights, all the windows ought to be in one wall; and if the opposite wall be at such a distance as not to be fully lighted, the room must be obscure. The height of a room exceeding nine or ten feet has little relation to utility; therefore proportion is the only rule for determining the height when above that number of feet.

Artists who deal in the beautiful, love to entertain the eye; palaces and sumptuous buildings, in which intrinsic beauty may be fully displayed, give them an opportunity of exerting their taste. But such a propensity is peculiarly unhappy with regard to private dwelling-houses; because, in these, relative beauty cannot be displayed to perfection without hurting intrinsic beauty. There is no opportunity for great variety of form in a small house; and in edifices of this kind, internal convenience has not hitherto been happily adjusted to external regularity. Perhaps an accurate coincidence in this respect is beyond the reach of art. Architects, however, constantly split upon this rock; for they never can be persuaded to give over attempting to reconcile these two incompatibles: how otherwise should it happen, that of the endless variety of private dwelling-houses, there should not be one found that is generally agreed upon as a good pattern? the unwearied propensity to make a house regular as well as convenient obliges the architect, in some articles, to sacrifice convenience to regularity; and, in others, regularity to convenience; and accordingly the house which turns out neither regular nor convenient, never fails to displease.

Nothing can be more evident, than that the form of a dwelling-house ought to be suited to the climate; yet no error is more common than to copy in Britain the form of Italian houses, not forgetting even those parts that are purposely contrived for collecting air, and for excluding the sun: witness our colonnades and logios, designed by the Italians to gather cool air, and exclude the beams of the sun, conveniences which the climate of this country does not require.

We shall next view architecture as one of the fine arts; which will lead us to the examination of such buildings, and parts of buildings, as are calculated solely to please the eye. Variety prevails in the works of nature; but art requires to be guided by rule and compass. Hence it is, that in such works of art as imitate nature, the great art is, to hide every appearance of art; which is done by avoiding regularity and indulging variety. But in works of art that are original and not imitative, such as architecture, strict regularity and uniformity ought to be studied, so far as consistent with utility.

Proportion is not less agreeable than regularity and uniformity; and therefore, in buildings intended to please the eye, they are all equally essential. It is taken for granted by many writers, that in all the parts of a building there are certain strict proportions which please the eye, in the same manner as in sound there are certain strict proportions which please the ear; and that, in both, the slightest deviation is equally disagreeable. Others seem to relish more a comparison between proportion in numbers and proportion in quantity; and maintain, that the same proportions are agreeable in both. The proportions, for example, of the num-
bers

Principles.

26
Utility and
beauty of-
ten incom-
patible.

27
Architec-
ture con-
sidered as a
fine art.

28
Difference
between
propor-
tions of
number
and quan-
tity.

Principles.

bers 16, 24, and 36, are agreeable; and so, say they, are the proportions of a room, whose height is 16 feet, the breadth 24, and the length 36. But it ought to be considered, that there is no resemblance or relation between the objects of different senses. What pleases the ear in harmony, is not the proportion of the strings of the instrument, but of the sound which these strings produce. In architecture, on the contrary, it is the proportion of different quantities that pleases the eye, without the least relation to sound. The same thing may be said of numbers. Quantity is a real quality of every body; number is not a real quality, but merely an idea that arises upon viewing a plurality of things in succession. An arithmetical proportion is agreeable in numbers; but have we from this any reason to conclude, that it must also be agreeable in quantity? At this rate, a geometrical proportion, and many others, ought also to be agreeable in both. A certain proportion may coincide in quantity and number; and amongst an endless variety of proportions, it would be wonderful if there never should be a coincidence. One example is given of this coincidence in the numbers 16, 24, and 36; but, to be convinced that it is merely accidental, we need but reflect, that the same proportions are not applicable to the external figure of a house, and far less to a column.

It is ludicrous to observe writers acknowledging the necessity of accurate proportions, and yet differing widely about them. Laying aside reasoning and philosophy, one fact universally agreed on ought to have undeceived them, that the same proportions which please in a model are not agreeable in a large building: a room 48 feet in length, and 24 in breadth and height, is well proportioned: but a room 12 feet wide and high, and 24 long, approaches to a gallery.

29
Beauty arising from proportion.

Perrault, in his comparison of the ancients and moderns, goes to the opposite extreme; maintaining, that the different proportions assigned to each order of columns are arbitrary, and that the beauty of these proportions is entirely the effect of custom. But he should have considered, that if these proportions had not originally been agreeable, they could never have been established by custom.

For illustrating this point, we shall add a few examples of the agreeableness of different proportions. In a sumptuous edifice, the capital rooms ought to be large, otherwise they will not be proportioned to the size of the building; for the same reason, a very large room is improper in a small house. But in things thus related, the mind requires not a precise or single proportion, rejecting all others; on the contrary, many different proportions are equally agreeable. It is only when a proportion becomes loose and distant, that the agreeableness abates, and at last vanishes. Accordingly, in buildings, rooms of different proportions are found to be equally agreeable, even where the proportion is not influenced by utility. With regard to the proportion the height of a room should bear to the length and breadth, it must be extremely arbitrary, considering the uncertainty of the eye as to the height of a room when it exceeds 16 or 17 feet. In columns, again, every architect must confess that the proportion of height and thickness varies betwixt 8 diameters and 10, and that every proportion between these two extremes is agreeable. Besides, there must certainly be a further

variation of proportion, depending on the size of the column. A row of columns 10 feet high, and a row twice that height, requires different proportions: The intercolumniations must also differ in proportion according to the height of the row.

Proportion of parts is not only itself a beauty, but is inseparably connected with a beauty of the highest relish, that of concord and harmony; which will be plain from what follows: A room, the parts of which are all finely adjusted to each other, strikes us not only with the beauty of proportion, but with a pleasure far superior. The length, the breadth, the height, the windows, raise each of them a separate emotion: These emotions are similar; and, though faint when separately felt, they produce in conjunction the emotion of concord or harmony, which is very pleasant. On the other hand, where the length of a room far exceeds the breadth, the mind, comparing together parts so intimately connected, immediately perceives a disagreement or disproportion which disgusts. Hence a long gallery, however convenient for exercise, is not an agreeable figure of a room.

In buildings destined chiefly or solely to please the eye, regularity and proportion are essentially necessary, because they are the means of producing intrinsic beauty. But a skilful artist will not confine his view to regularity and proportion; he will also study congruity, which is perceived when the form and ornaments of a structure are suited to the purpose for which it is appointed. Hence every building ought to have an expression suited to its destination. A palace ought to be sumptuous and grand; a private dwelling, neat and modest; a play-house, gay and splendid; and a monument, gloomy and melancholy. A heathen temple has a double destination: It is considered as a house dedicated to some divinity; therefore it ought to be grand, elevated, and magnificent: It is also considered as a place of worship; and therefore ought to be somewhat dark and gloomy, because dimness or obscurity produces that tone of mind which is favourable to humility and devotion. Columns, besides their chief destination of being supports, contribute to that peculiar expression which the destination of a building requires. Columns of different proportions serve to express loftiness, lightness, &c. as well as strength. Situation may also contribute to expression: Convenience regulates the situation of a private dwelling-house; and the situation of a palace ought to be lofty. This leads to a question, Whether the situation, where there happens to be no choice, ought, in any measure, to regulate the form of the edifice? The connection between a great house and a neighbouring field, though not extremely intimate, demands, however, some congruity. It would, for example, displease us to find an elegant building thrown away upon a wild uncultivated country: congruity requires a polished field for such a building. The old Gothic form of building was well suited to the rough uncultivated regions where it was invented; but was very ill adapted to the fine plains of France and Italy.

The external structure of a house leads naturally to its internal structure. A large and spacious room, which is the first that commonly receives us, is a bad contrivance in several respects. In the first place, when immediately from the open air we step into such

Principles.

30
Form of structures to be suited to the purposes for which they are intended.

31
Internal division of houses.

Principles. a room, its size in appearance is diminished by contrast; it looks little, compared with the great canopy of the sky. In the next place, when it recovers its grandeur, as it soon doth, it gives a diminutive appearance to the rest of the house; passing from it, every apartment looks little. In the third place, by its situation it serves only for a waiting-room, and a passage to the principal apartments. Rejecting therefore this form, a hint may be taken from the climax in writing for another that appears more suitable: A handsome portico, proportioned to the size and fashion of the front, leads into a waiting-room of a larger size, and this to the great room, all by a progression of small to great.

Grandeur is the principal emotion that architecture is capable of raising in the mind: it might therefore be the chief study of the artist, in great buildings destined to please the eye. But as grandeur depends partly on size, it is unlucky for architecture that it is governed by regularity and proportion, which never deceive the eye by making objects appear larger than they are in reality. But though regularity and proportion contribute nothing to grandeur, so far as that emotion depends on size; yet they contribute greatly to it by confining the size within such bounds that it can be taken in and examined at one view; for when objects are so large as not to be comprehended but in parts, they tend rather to distract than satisfy the mind.

We shall next pass to such ornaments as contribute to give buildings a peculiar expression. It has been doubted, whether a building can regularly admit any ornament but what is useful, or at least has that appearance. But, considering the double aim of architecture, as a fine, as well as an useful art, there is no reason why ornaments may not be added to please the eye, without any relation to utility. A private dwelling-house, it is true, and other edifices where use is the chief aim, admit not regularly any ornament but what has at least the appearance of use; but temples, triumphal arches, and other buildings intended chiefly or solely for show, may be highly ornamented.

³² Different kinds of ornaments. This suggests a division of ornaments into three kinds, viz. 1. Ornaments that are beautiful without relation to use; such as statues, vases, basso or alto relievo: 2. Things in themselves not beautiful, but possessing the beauty of utility, by imposing on the spectator, and appearing to be useful; such as blind windows: 3. Where things are beautiful in themselves, and at the same time take on the appearance of use; such as pilasters.

With regard to the *first*, we naturally require that a statue be so placed, as to be seen in every direction, and examined at different distances. Statues, therefore, are properly introduced to adorn the great stair that leads to the principal door of a palace, or to lessen the void between pillars. But a niche in the external front is an improper place for a statue. There is an additional reason against placing them upon the roof or top of the walls: their ticklish situation gives pain, as they have the appearance of being in danger of tumbling down; besides, we are inclined to feel from their being too much exposed to the inclemencies of the weather. To adorn the top of the wall

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Principles. with a row of vases, is an unhappy conceit, by placing a thing, whose natural destination is utility, where it cannot have even the appearance of use. As to carvings upon the external surface of a building, termed *basso relievo* when flat, and *alto relievo* when prominent, all contradictory expressions ought to be avoided. Now, firmness and solidity being the proper expressions of a pedestal, and, on the contrary, lightness and delicacy of carved work, the pedestal, whether of a column or of a statue, ought to be sparingly ornamented. The ancients never ventured any bolder ornament than the *basso relievo*.

With respect to ornaments of the *second* kind, it is a great blunder to contrive them so as to make them appear useless. A blind window, therefore, when necessary for regularity, ought to be so disguised as to appear a real window: when it appears without disguise, it is disgusting, as a vain attempt to supply the want of invention; it shows the irregularity in a stronger light, by signifying that a window ought to be there in point of regularity, but that the architect had not skill sufficient to connect external regularity with internal convenience.

As to the *third*, it is an error to sink pilasters so far into the wall, as to remove totally, or mostly, the appearance of use. They should always project so much from the wall, as to have the appearance of supporting the entablature over them.

³³ Columns. From ornaments in general, we descend to a pillar, the chief ornament in great buildings. The destination of a pillar is to support, really, or in appearance, another part termed the *entablature*. With regard to the form of a pillar, it must be observed, that a circle is a more agreeable figure than a square, a globe than a cube, and a cylinder than a parallelopipedon. This last, in the language of architecture, is saying, that a column is a more agreeable figure than a pilaster; and for that reason it ought to be preferred, when all other circumstances are equal. Another reason concurs, that a column annexed to a wall, which is a plain surface, makes a greater variety than a pilaster. Besides, pilasters at a distance are apt to be mistaken for pillars; and the spectator is disappointed when, on a nearer approach, he discovers them to be only pilasters.

As to the parts of a column, a bare uniform cylinder, without a capital, appears naked; and without a base, appears too ticklishly placed to stand firm; it ought therefore to have some finishing at the top and bottom: Hence the three chief parts of a column, the shaft, the base, and the capital. Nature undoubtedly requires proportion among these parts, but it admits of variety of proportion. Vitruvius and some of the elder writers seem to think, that the proportions of columns were derived from the human figure, the capital representing the head, the base the feet, and the shaft the body. The Tuscan has been accordingly denominated the *Gigantic*; the Doric, the *Herculean*; the Ionic, the *Matronal*; and the Corinthian, the *Virginal*:—The Composite is a mixture of the Corinthian and Ionic. As to the base, the principle of utility interposes to vary it from the human figure, and to proportion it so to the whole, as to give the column the appearance of stability.

³⁴ Whether new orders can be distinguished. Among the Greeks, we find only three orders of columns, the Doric, the Ionic, and the Corinthian, distinguished.

G g

Principles

distinguished from each other by their destination as well as by their ornaments. It has been disputed, whether any new order can be added to these: some hold the affirmative, and give for instances the Tuscan and Composite; others maintain, that these properly are not distinct orders, but only the original orders, with some slight variation. The only circumstances that can serve to distinguish one order from another, are the form of the column, and its destination. To make the first a distinguishing mark, without regard to the other, would multiply orders without end. Destination is more limited, and it leads us to distinguish three kinds of orders; one plain and strong, for the purpose of supporting plain and massy buildings; one delicate and graceful, for supporting buildings of that character; and between these a third, for supporting buildings of a mixed nature. So that, if destination alone is to be regarded, the Tuscan is of the same order with the Doric, and the Composite with the Corinthian.

The ornaments of these three orders ought to be suited to the purposes for which they are intended. Plain and rustic ornaments would not be a little discordant with the elegance of the Corinthian order, and sweet and delicate ornaments not less with the strength of the Doric.

35
Rules re-
garding
building in
general.

With respect to buildings of every kind, one rule, dictated by utility, is, that they be firm and stable. Another, dictated by beauty, is, that they also appear so to the eye: for every thing that appears tottering, and in hazard of tumbling down, produceth in the spectator the painful emotion of fear, instead of the pleasing emotion of beauty; and accordingly it should be the great care of the artist, that every part of his edifice appear to be well supported. Some have introduced a kind of conceit in architecture, by giving parts of buildings the appearance of falling; of this kind is the church of St Sophia in Constantinople; the round towers in the uppermost stories of Gothic buildings is in the same false taste.

The most considerable ornaments used in architecture are the five orders of columns, pediments, arches, balusters, &c. of which in the following chapters.

CHAP. I. *Of the Orders of Architecture.*

An order consists of two principal members, the COLUMN and the ENTABLATURE; each of which is composed of three principal parts. Those of the Column are, the *Base*, the *Shaft*, and the *Capital*; and those of the Entablature are, the *Architrave*, the *Frize*, and the *Cornice*. All these are subdivided into many lesser parts, whose number, form, and dimensions, characterise each order, and express the degree of strength, delicacy, richness, or simplicity peculiar to it.

36
Parts of an
order divided
into
two classes.

The parts that compose an order may be distributed into two different classes. In the *first* may be ranged all that have an analogy to the primitive huts, and represent some part that was necessary in their construction. Such are the shaft of the column, with the plinth of its base, and the abacus of its capital; likewise the architrave and triglyphs, the mutules, modillions, or dentiles, which all of them represent the rafters, or some other pieces of timber used to sup-

port the covering; and the corona, representing the beds of materials that composed the covering. All these may properly be distinguished by the name of *essential members*. The subservient parts, contrived for the use or ornaments of the former, and commonly called *mouldings*, may constitute the *second class*.

There are eight regular mouldings in ornamenting columns: the fillet, listel, or square; the astragal, or bead; the torus, or tore; the scotia, mouth, or casement; the echinus, ovolo, or quarter-round; the inverted cyma, talon, or ogee; the cyma, cyma recta, or cymation; the cavetto, or hollow. The names of these allude to their forms, and their forms are adapted to the purposes for which they are intended. See Plate XXXVIII.

The ovolo and talon, as they are strong at the extremities, are fit for supports; the cyma and cavetto, though improper for supports, serve for coverings to shelter other members; the torus and astragal, being shaped like ropes, are intended to bind and fortify the parts with which they are connected: But the use of the scotia and fillet is only to separate and distinguish the other mouldings, to give a graceful turn to the profile, and to prevent the confusion which would arise from joining several curved members together.

There are various methods of describing the contours of mouldings; but the simplest and best is to form them of quadrants of circles.

An assemblage of what are called essential parts and mouldings is termed a *profile*. The most perfect profiles are such as are composed of few mouldings, varied in form and size; and so disposed, that the straight and curved ones succeed each other alternately. When ornaments are employed in mouldings, some of them should be left plain, in order to give a proper repose: For when all are ornamented, the figure of the profile is lost.

Columns, in imitation of trees, from which they drew their origin, are tapered in their shafts. In the antiques the diminution is variously performed: beginning sometimes from the foot of the shaft, and at others from one quarter, or one third of its height; the lower part being perfectly cylindrical. The former of these was most in use amongst the ancients, and, being the most natural and graceful, ought to have the preference, though the latter hath been more universally practised by modern artists.

The first architects, says Mr Auzoult, probably made their columns in straight lines, in imitation of trees; so that their shaft was a frustum of a cone: but finding this form abrupt and disagreeable, they made use of some curve, which, springing from the extremities of the superior and inferior diameters of the column, swelled beyond the sides of the cone, and by that means gave a more pleasing figure to the contour.

Vitruvius, in the second chapter of his third book, mentions this practice, but in so obscure and cursory a manner, that his meaning hath not been understood; and several of the modern architects, intending to conform themselves to his doctrine, have made the diameters of their columns greater in the middle than at the foot of the shaft. Leon Baptista, Alberti, and others of the Florentine and Roman architects, have carried this to a very great excess; for which they have

Principles.

37
Profile,
what.

38
Diminu-
tion of co-
lumns.

THE CHURCH OF ST. MARY

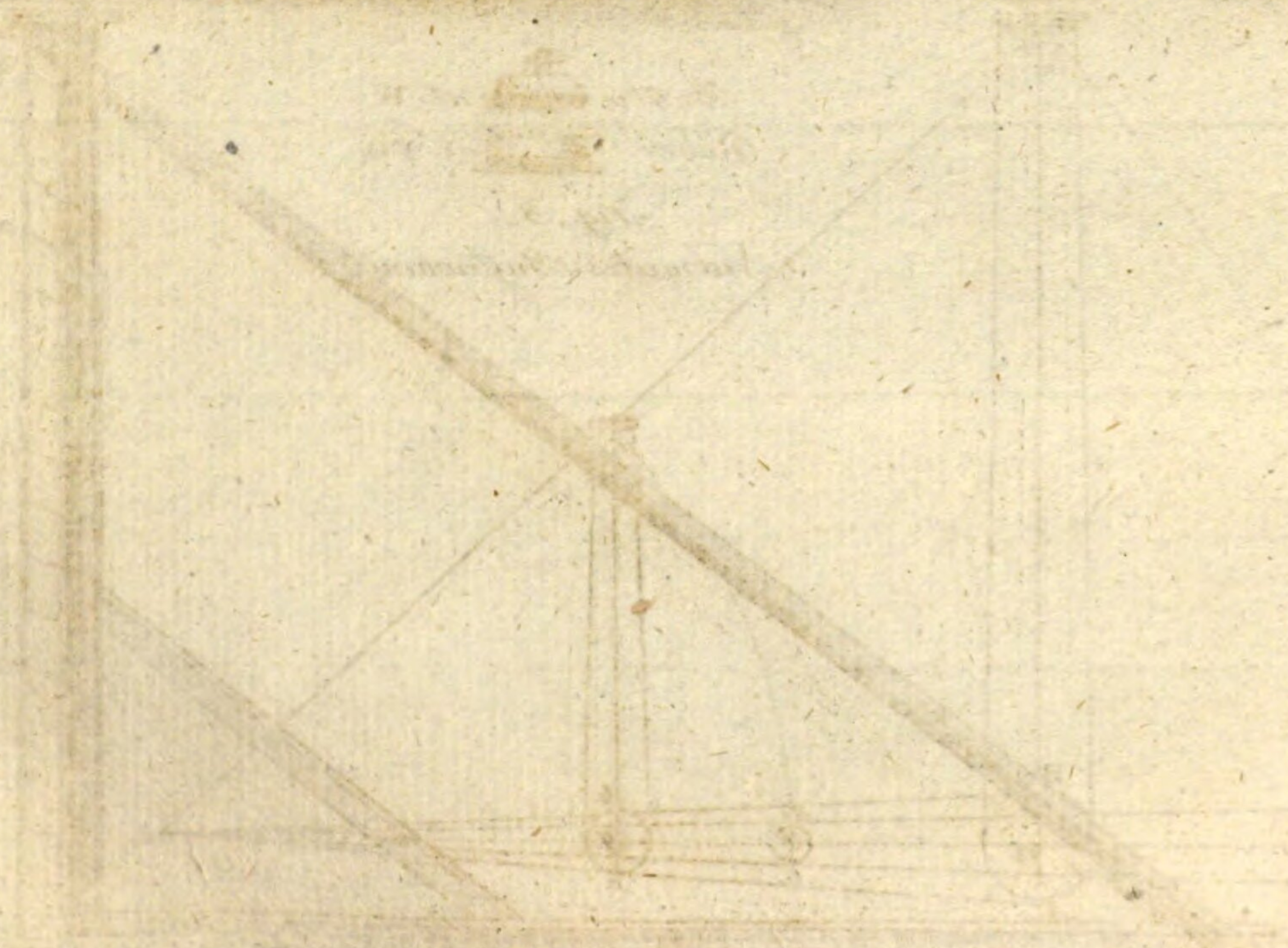
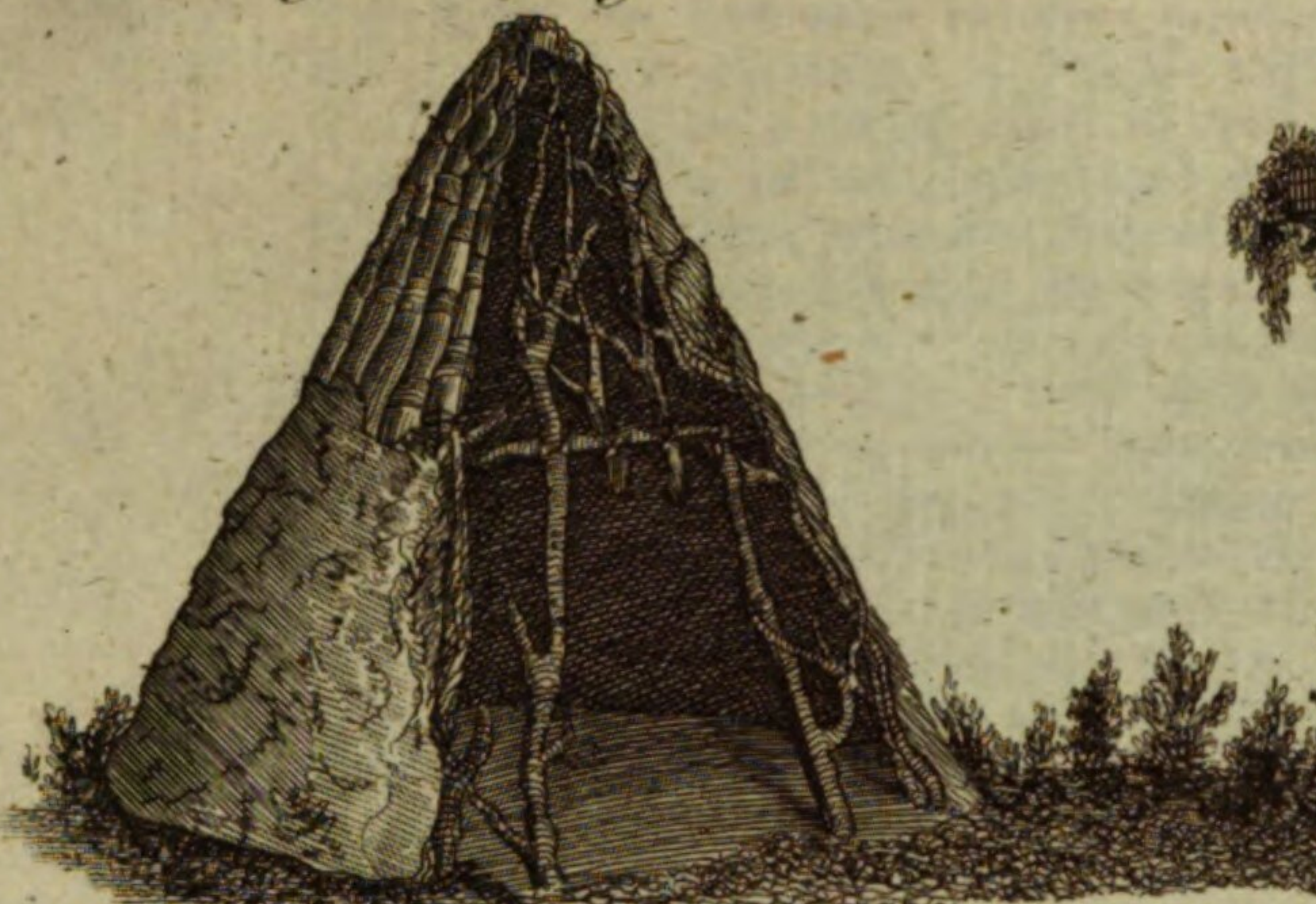


Fig. 1.
The first sort of Fluts.



RE. *Fig. 2.*
The second sort of Huts.

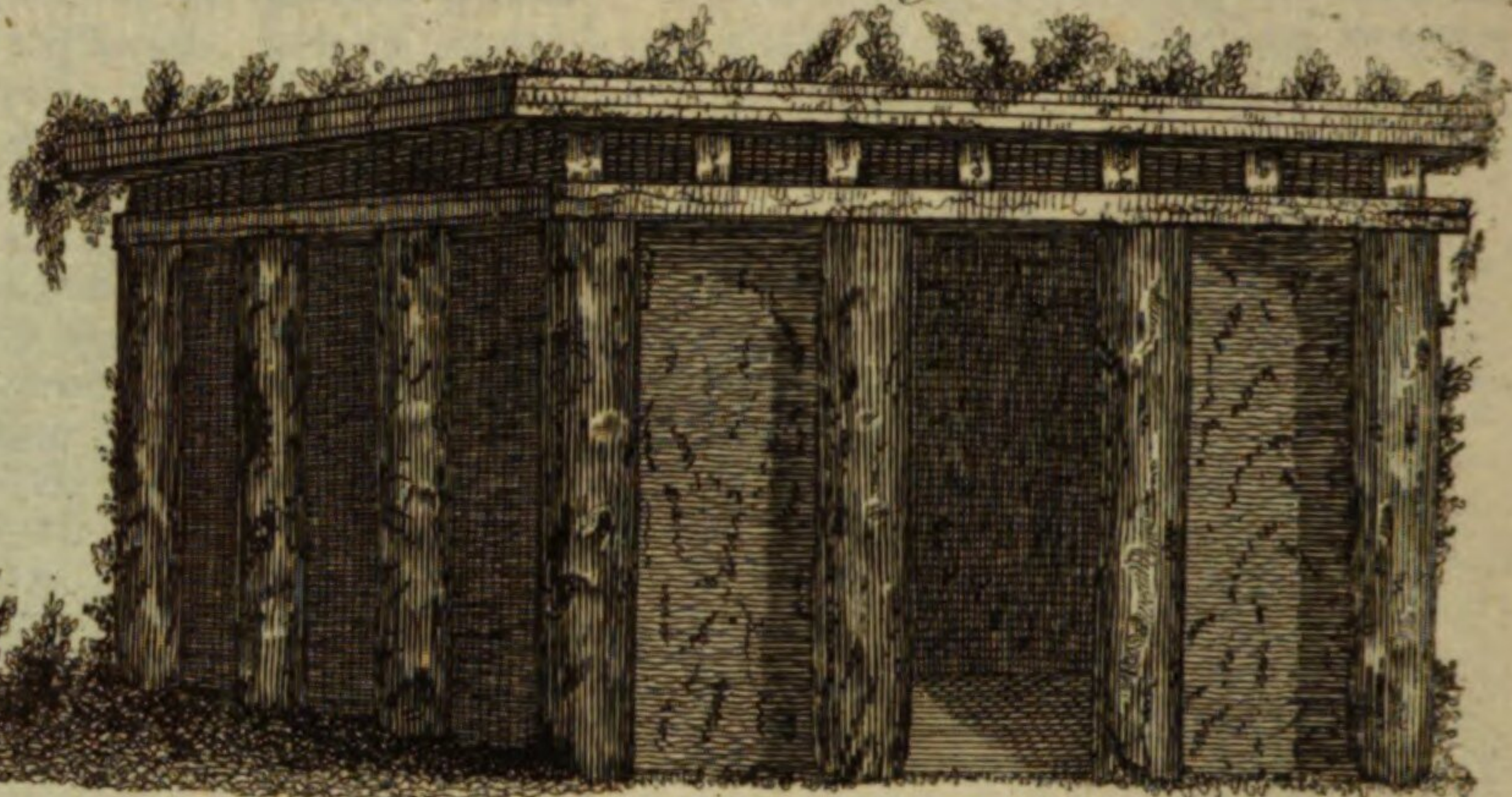


Fig. 3. The third sort of Huts which gave rise to the Doric Order.

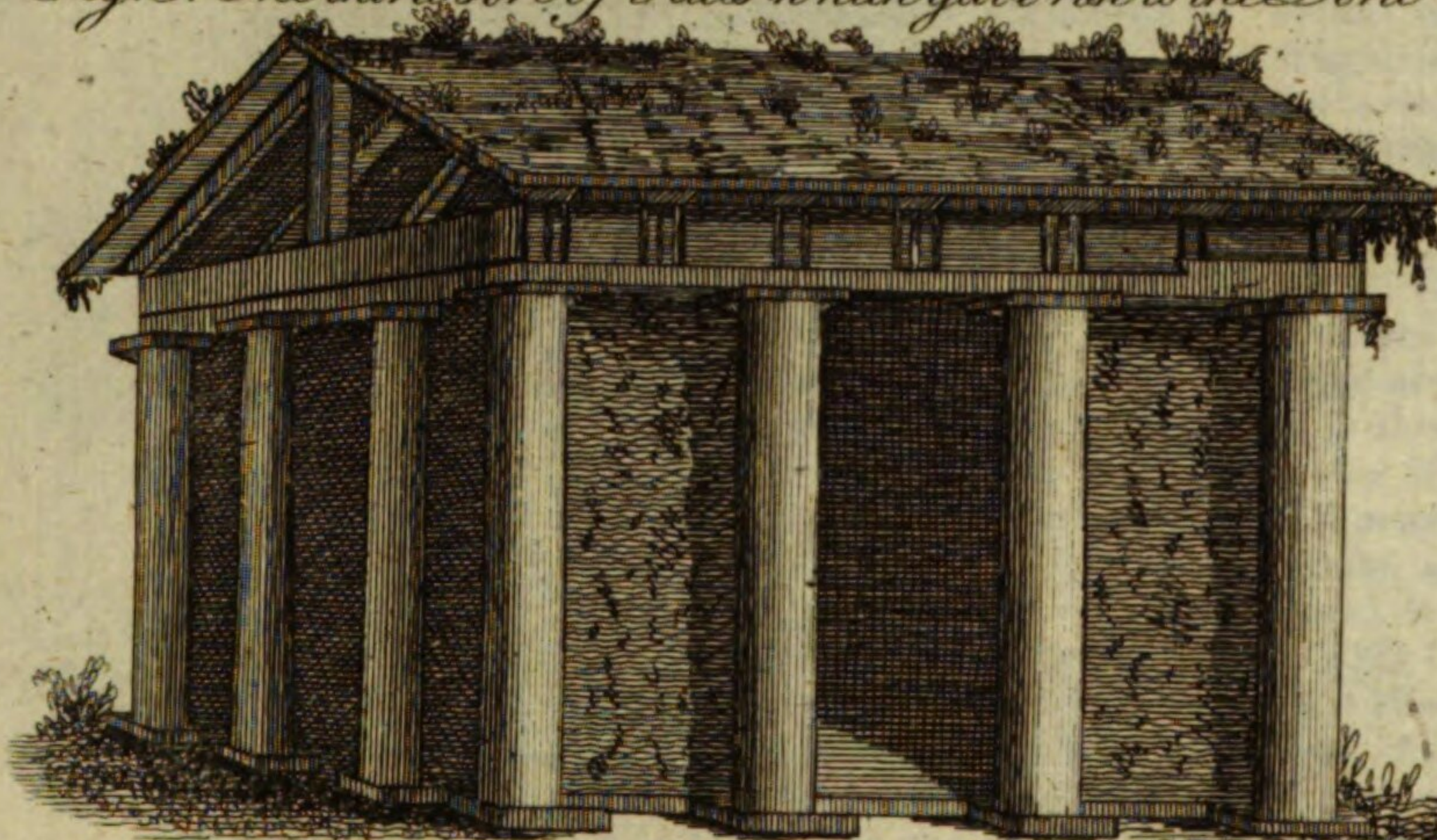
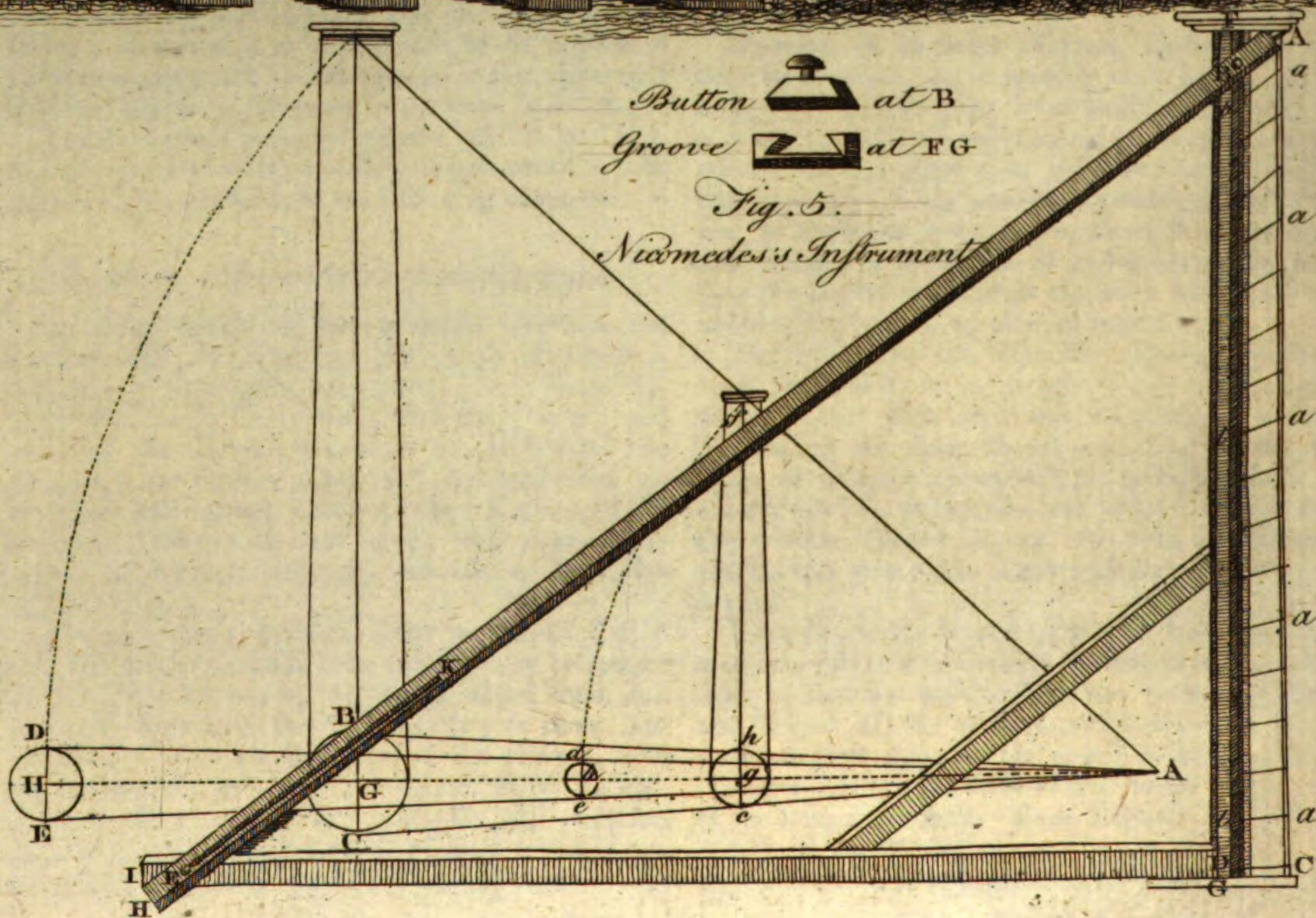
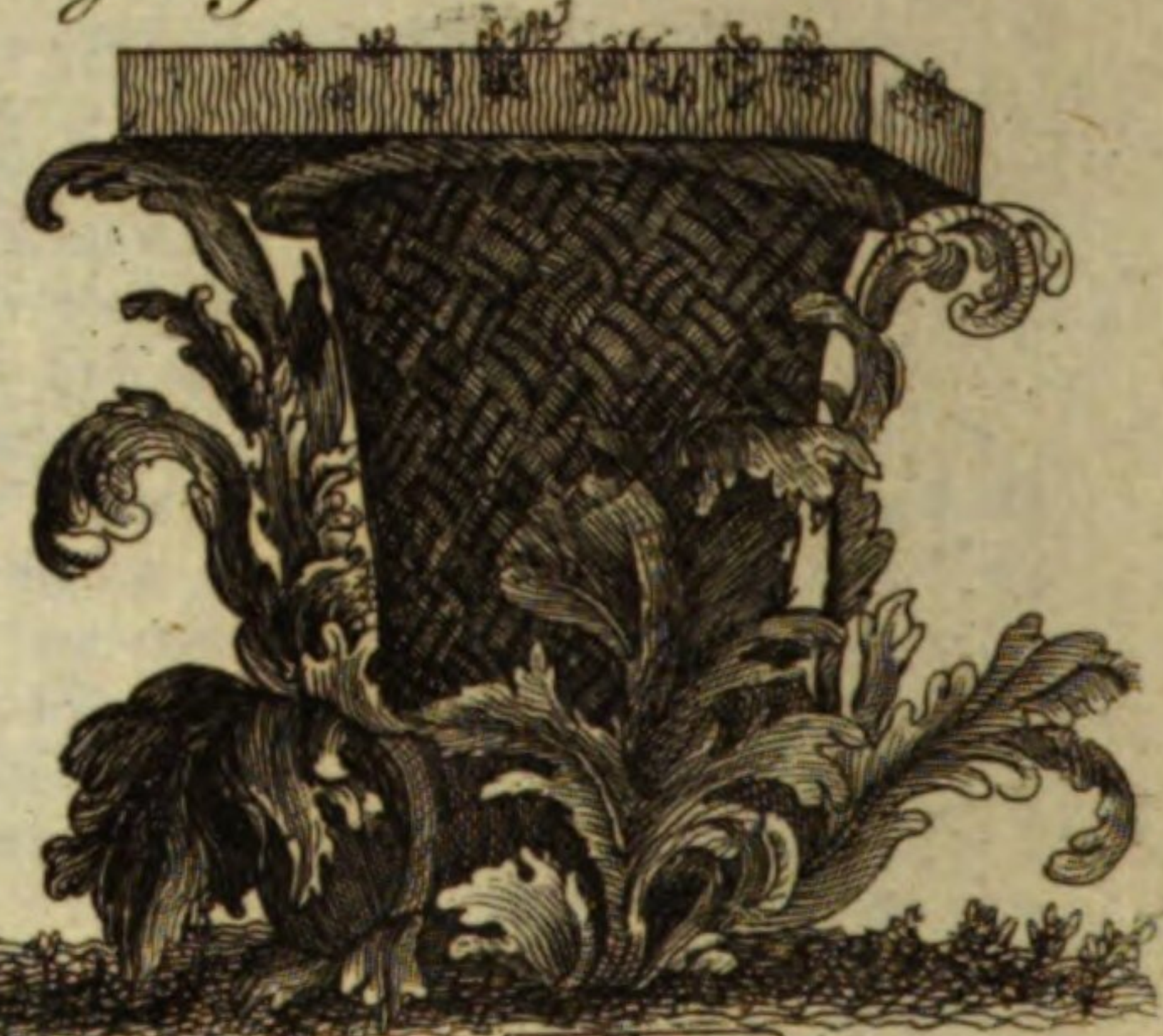
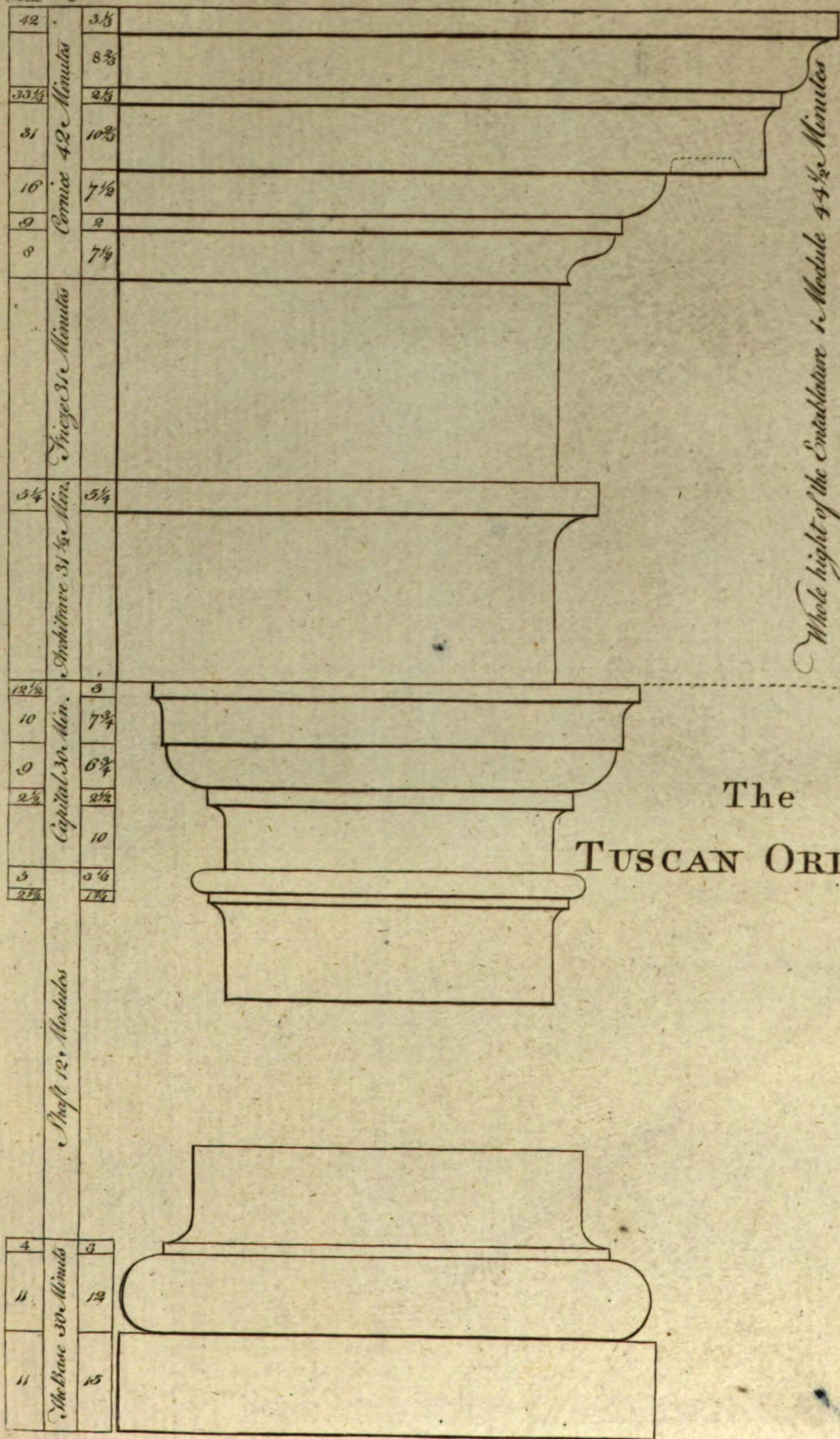


Fig. 4.
Origin of the Corinthian Order.

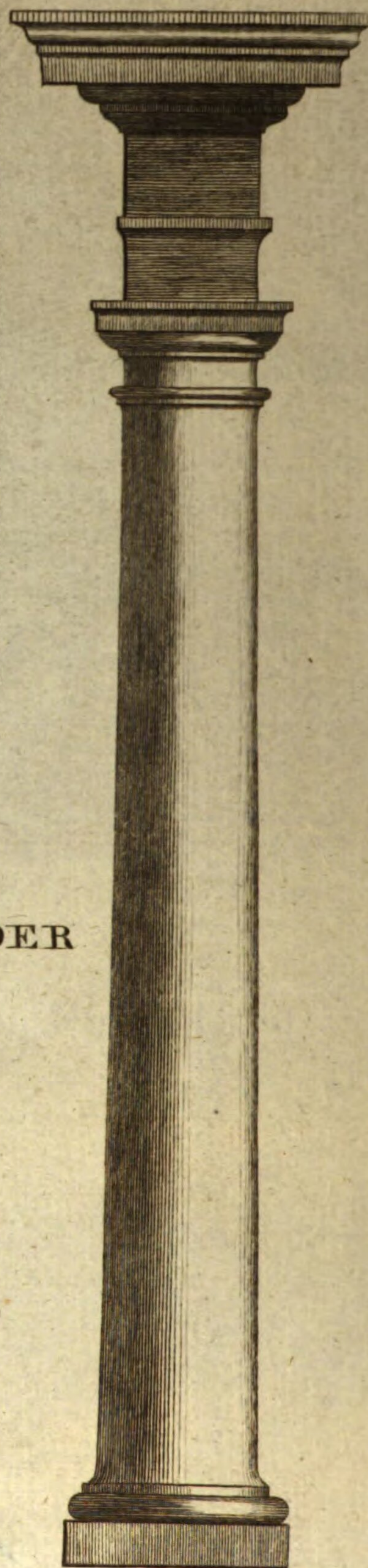


A Bell Prin. Wal. Sculptor fecit.

Projections Heights



The
TUSCAN ORDER



A. Bell Sculp.

Principles. have been justly blamed, as it is neither natural, reasonable, nor beautiful.

Monsieur Auzoult observes, that a column, supposing its shafts to be the frustum of a cone, may have an additional thickness in the middle, without being swelled there beyond the bulk of its inferior parts; and supposes the addition mentioned by Vitruvius to signify nothing but the increase towards the middle of the column, occasioned by changing the straight line, which at first was in use, for a curve.

This supposition is extremely just, and founded on what is observed in the works of antiquity; where there is no instance of columns thicker in the middle than at the bottom, though all have the swelling hinted at by Vitruvius, all of them being terminated by curves; some granite columns excepted, which are bounded by straight lines; a proof, perhaps, of their antiquity, or of their having been wrought in the quarries of Egypt by bungling and unskilful workmen.

Monsieur Blondel, in his book intitled *Resolution des quatre principaux problemes d'Architecture*, teaches various manners of diminishing columns; the best and simplest of which is by means of the instrument which Nicomedes invented to describe the first conchoid: for this, being applied at the bottom of the shaft, performs at one sweep both the swelling and the diminution; giving such a graceful form to the column, that it is universally allowed to be the most perfect practice hitherto discovered. The columns in the Pantheon, accounted the most beautiful among the antiques, are made in this manner; as appears by the exact measures of one of them to be found in Desgodet's antiquities of Rome.

39
Vignola's
method.

To give an accurate idea of the operation, it will be necessary first to describe Vignola's method of diminution, on which it is grounded. "As to this second method (says Vignola), it is a discovery of my own; and although it be less known than the former, it will be easily comprehended by the figure. Having therefore determined the measures of your column, (that is to say, the height of the shaft, and its inferior and superior diameters), draw a line indefinitely, from C through D, perpendicular to the axis of the column: this done, set off the distance CD, which is the inferior semi-diameter, from A, the extreme point of the superior semi-diameter, to B, a point in the axis; then from A, through B, draw the line A B E, which will cut the indefinite line C D in E; and, from this point of intersection E, draw thro' the axis of the column any number of rays as E b a, on each of which, from the axis towards the circumference, setting off the interval C D, you may find any number of points, a, a, a, through which if a curve be drawn, it will describe the swelling and diminution of the column."

40
Nicomedes's in-
strument.

Though this method be sufficiently accurate for practice, especially if a considerable number of points be found, yet, strictly speaking, it is defective; as the curve must either be drawn by hand, or by applying a flexible ruler to all the points; both of which are liable to variations. Blondel, therefore, to obviate this objection, (after having proved the curve passing from A to C through the points a a, to be of the same na-

ture with the first conchoid of the ancients), employed the instrument of Nicodemus to describe it; the construction of which is as follows:

Having determined, as above, the length of the shaft, with the inferior and superior diameters of the column, and having likewise found the length of the line C D E, take three rulers, either of wood or metal, as F G, I D, and A H; of which let F G and I D be fastened together at right angles in G. Cut a dove-tail groove in the middle of F G, from top to bottom; and at the point E on the ruler I D (whose distance, from the middle of the groove in F G, is the same as that of the point of intersection from the axis of the column) fix a pin; then on the ruler A H set off the distance A B, equal to C D the inferior semi-diameter of the column, and at the point B fix a button, whose head must be exactly fitted to the groove made in F G, in which it is to slide; and, at the other extremity of the ruler A H, cut a slit or canal from H to K, whose length must not be less than the difference of length between E B and E D, and whose breadth must be sufficient to admit the pin fixed at E, which must pass through the slit, that the ruler may slide thereon.

The instrument being thus completed, if the middle of the groove, in the ruler F G, be placed exactly over the axis of the column, it is evident that the ruler A H, in moving along the groove, will with the extremity A describe the curve A a a C; which curve is the same as that produced by Vignola's method of diminution, supposing it done with the utmost accuracy; for the interval A B, a b, is always the same; and the point E is the origin of an infinity of lines, of which the parts B A, b a, b a, extending from the axis to the circumference, are equal to each other and to D C. And if the rulers be of an indefinite size, and the pins at E and B be made to move along their respective rulers, so that the intervals A B and D E may be augmented or diminished at pleasure, it is likewise evident that the same instrument may be thus applied to columns of any size.

In the remains of antiquity the quantity of the diminution is various; but seldom less than one eighth of the inferior diameter of the column, nor more than one sixth of it. The last of these is by Vitruvius esteemed the most perfect.

41
Quantity of
diminution.

Of the TUSCAN ORDER.

This is the most solid and simple of all the orders. ⁴²Pl. XXXV. It is composed of few parts, devoid of ornaments, and so massy, that it seems capable of supporting the heaviest burden. There are no remains of a regular Tuscan order among the antiques: the doctrine of Vitruvius concerning it is obscure; and the profiles of Palladio, Scamozzi, Serlio, de l'Orme, and Vignola, are all imperfect.

The height of the Tuscan column is 14 modules, or semi-diameters, each consisting of 30 minutes; and that of the whole entablature $3\frac{1}{2}$ modules; which being divided into 10 equal parts, three of them are for the height of the architrave, three for the frieze, and the remaining four for the cornice. The capital is one module; the base, including the lower cincture of

G g 2

the

Principles. the shaft, is likewise one module; and the shaft, with its upper cincture and astragal, 12 modules.

These are the general dimensions of the order; the particular dimensions may be learned by inspection of the plates.

In the remains of antiquity, the quantity of diminution at the top of the Tuscan column is various; but seldom less than one eighth, nor more than one sixth, of the inferior diameter of the column. The last of these is generally preferred; and Chalmers and others make the same diminution in all columns, without regard to their order.

Of the DORIC Order.

43
Plate
XXXVI.

This order is next in strength to the Tuscan; and, being of a grave, robust, and masculine aspect, is by Scamozzi called the *Herculean*. As it is the most ancient of all the orders, it retains more of the structure of the primitive huts than any of the rest; the triglyphs in its frieze representing the ends of the joists, and the mutules in its cornice representing the rafters.

The height of the Doric column, including its capital and base, is 16 modules, and the height of the entablature four; the latter of which being divided into eight parts, two of them are for the architrave, three for the frieze, and three for the cornice.

In most of the antiques, the Doric column is executed without a base. Vitruvius likewise makes it without one; the base, according to him, having been first employed in the Ionic order, in imitation of the sandal of a woman's foot. Scamozzi blames this practice, and most of the modern architects are of his opinion.

44
Ornaments
of the frieze.

In the profile of the theatre of Marcellus, the frieze is enriched with husks and roses; the architrave consists only of one fascia and a fillet; the drops are conical; the metope is enriched with a bull's skull, adorned with a garland of beads, in imitation of those on the temple of Jupiter Tonans, at the foot of the Capitol. In some antique fragments, and in a great many modern buildings, the metopes are alternately adorned with ox-skulls and pateras. But they may be filled with any other ornaments, according to the destination of the building.

The IONIC Order

45
Plate
XXXVII.

Is of a more slender make than the Doric or Tuscan; its appearance is simple, yet graceful and majestic; its ornaments are few; so that it has been compared to a sedate matron, in decent, rather than magnificent, attire.

Among the ancients, the form of the Ionic profile appears to have been more positively determined than that of any other order; for, in all the antiques at Rome (the temple of Concord excepted), it is exactly the same.

The modern artists have likewise been unanimous in their opinions; all of them, excepting Palladio and his imitators, having employed the dentil, cornice, and the other parts of the profile, nearly as they are found in the Coliseum, the temple of Fortune, and the theatre of Marcellus.

The height of the Ionic column is 18 modules, and that of the entablature $4\frac{1}{2}$, or one quarter of the height of the column, as in the other orders, which is a trifle less than in any of the antique Ionics. In all the antiques, the base is Attic; and the shaft of the column may either be plain, or fluted with 24 flutings, or 20 only, as in the temple of Fortune. The plan of the flutings may be a trifle more than a semicircle, as in the forum of Nerva, because they then appear more distinct. The fillets, or intervals between them, must not be broader than one third of the breadth of a fluting, nor narrower than one fourth. The ornaments of the capital must correspond with the flutings of the shaft; and there must be an ove above the middle of each fluting. The volutes ought to be traced according to Mr Goldman's method, which is as follows:

Plate XXXVIII. fig. 9. Draw the cathetus, F C, whose length must be 15 minutes, or one fourth of a module; and, from the point C, describe the eye of the volute A E B D, of which the diameter is to be $6\frac{1}{2}$ minutes; divide it into four equal sectors by the diameter, A B, D E. Bisect the radii C A, C B, in 1 and 4; and on the line 1, 4, construct a square 1, 2, 3, 4. From the centre C, to the angles 2, 3, draw the diagonals C 2, C 3, and divide the side of the square 1, 4, into 6 equal parts, at 5, 9, C, 12, 8. Then through the points 5, 9, 12, 8, draw the lines 5, 6, 9, 10, 12, 11, 8, 7, parallel to the diameter E D, which will cut the diagonals in 6, 7, 10, 11; and the points 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, will be the centres of the volute. From the first centre 1, with the distance 1 F, describe the quadrant F G; from the second centre 2, with the distance 2 G, describe the quadrant G H; and, continuing the same operation from all the 12 centres, the contour of the volute will be completed.

46
Method of
drawing
volute.

Fig. 10. The centres for describing the fillet are found in this manner. Construct a triangle, of which the side A F is equal to the part of the cathetus contained between A F and the side F V, equal to C 1; place the distance F S from F towards A, equal to F S the breadth of the fillet, and through the point S draw the line S T, which will be to C 1 in the same proportion as A S is to A F; place this line on the diameter of the eye A B; divide it into three equal parts; and, through the points of division, draw lines parallel to the diameter E D, which will cut the diagonals C 2, C 3, and you will have twelve new centres, from whence the interior contour of the fillet may be described in the same manner as the exterior one was from the first centres.

Of the CORINTHIAN Order.

The proportions of this order are extremely delicate. It is divided into a great variety of members, and enriched with a profusion of ornaments. Scamozzi calls it the *Virginal order*; and indeed it has all the delicacy in its make, and all the delicacy in its dress, peculiar to young girls.

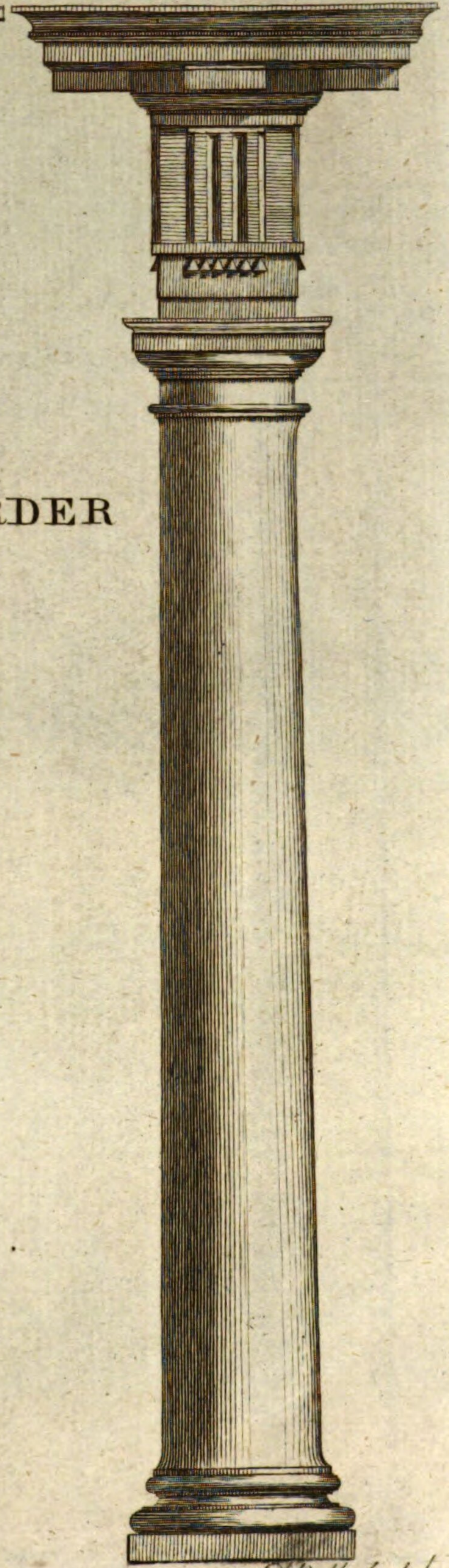
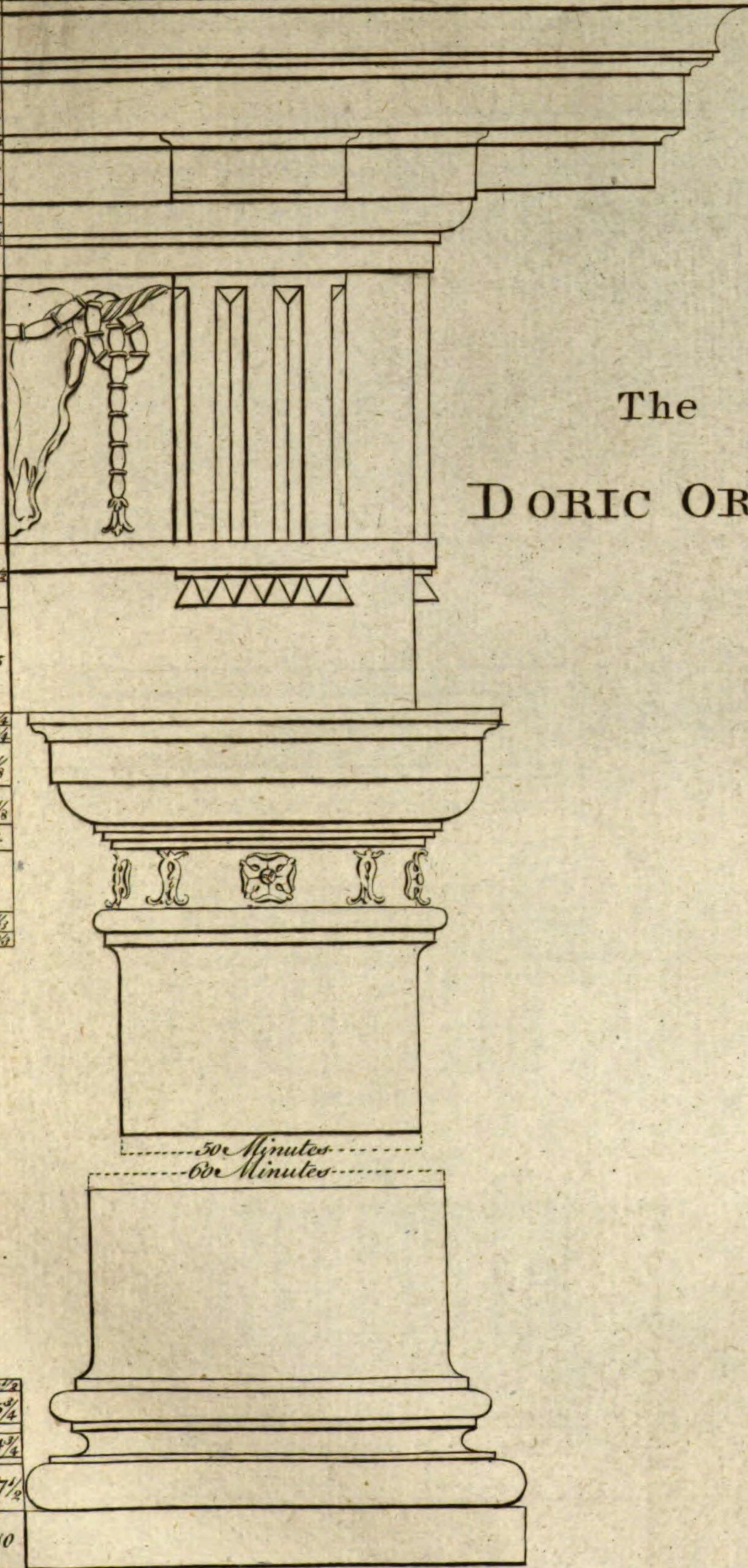
The most perfect model of the Corinthian order is generally allowed to be in the three columns in the Campo Vaccino at Rome, the remains, as it is thought, of the temple of Jupiter Stator.

47
Plate
XXXIX.

The

Projections Heights

37	2 1/2
50	7
48	2 1/4
43	8 3/4
43 1/2	2 3/4
40	7 1/2
9	5 1/4
4	1 1/4
3 1/2	5
45 Minutes	
3 1/2	5
3 1/2	4
25	
63 1/4	1 1/4
63 1/4	2 3/4
40 1/2	7 1/8
9 1/2	6 1/8
13 1/4	4
10 1/4	
5	8 1/2
2 1/2	1 1/4
32 Minutes	
13 Modules 28 Minutes	
7	5 1/4
4	4 1/4
2	
4 3/8	7 1/2
4 1/3	10
30 Minutes	



A. Bell Sculp^t

Object	Heights
54	2 1/2
44	8 1/2
44 1/2	3
41	11
23	6 3/4
17 1/2	2
15	10 1/2
8 1/2	6 3/4
7 3/8	6 3/4
8	6 1/2
3 1/3	15 1/2
2 3/4	2 1/2
2 3/4	6 1/2
7 3/4	2 1/2
7 1/4	3 3/4
1 3/4	5 2/3
10 1/3	7 2/3
4 1/2	3 1/2
3 1/2	1 1/2
3 1/3	2 1/2
7	5 3/4
2 1/2	1 1/4
1 1/2	7 1/2
11 2/3	10

54 Minutes

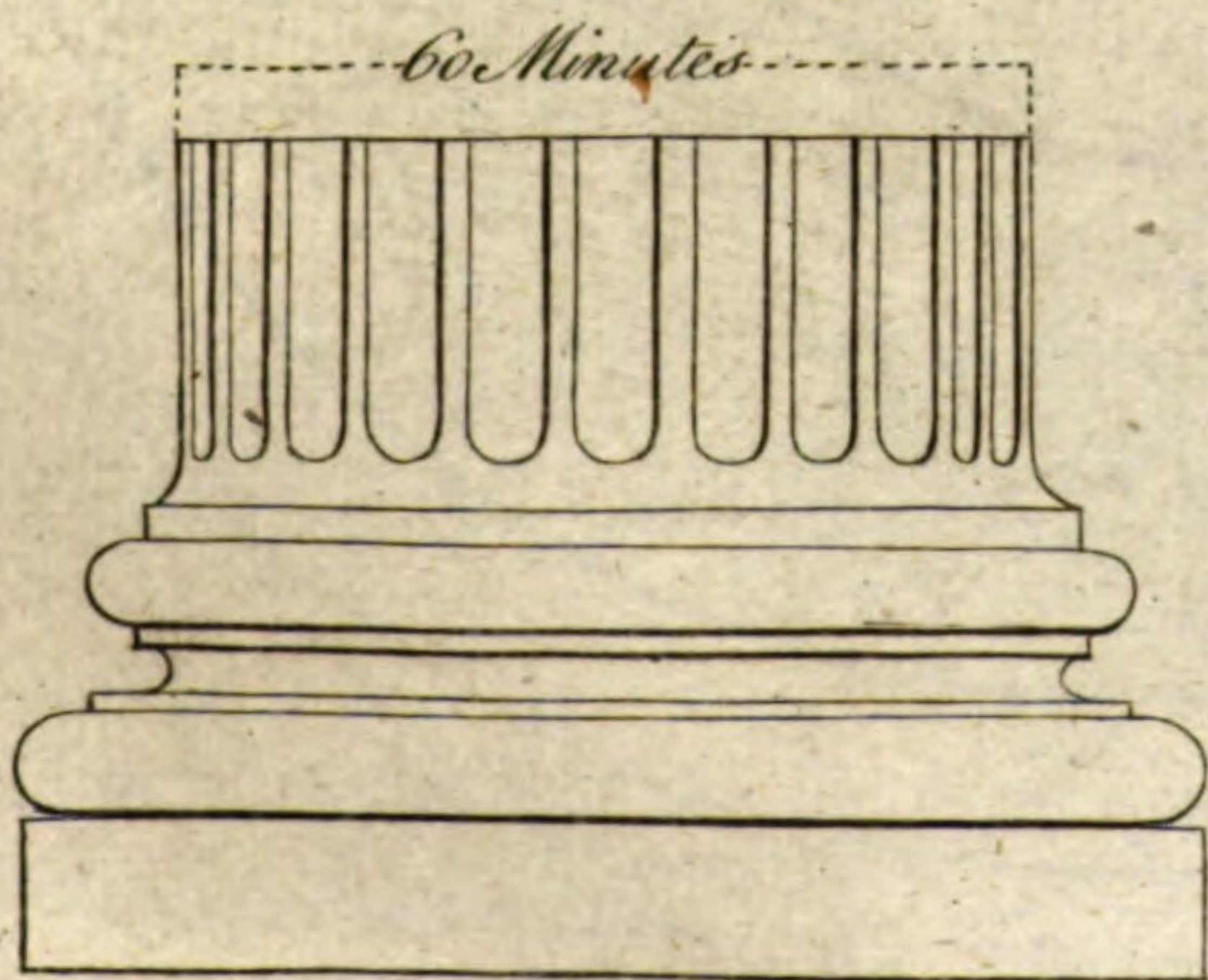
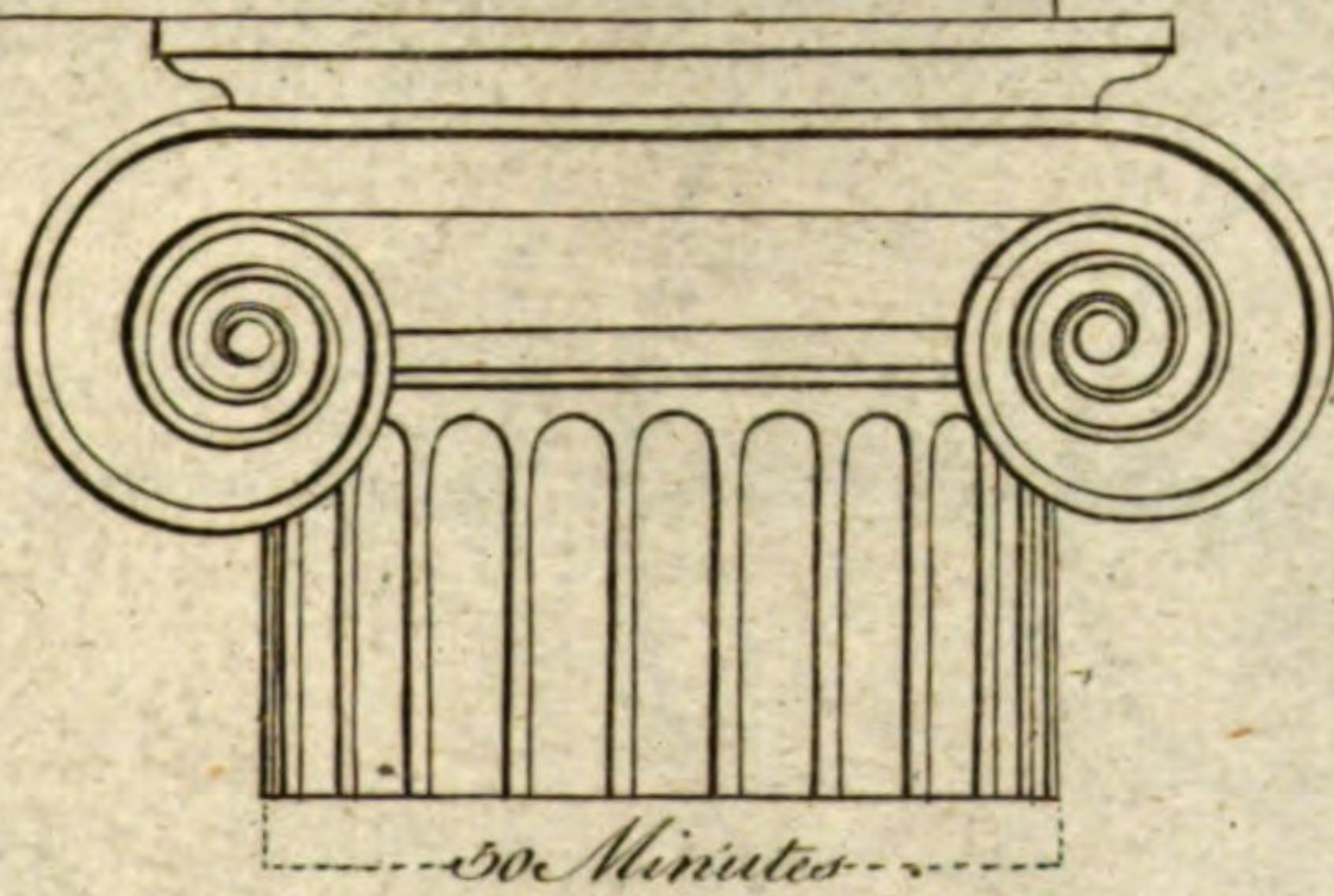
40 1/2 Minutes

40 1/2 Minutes

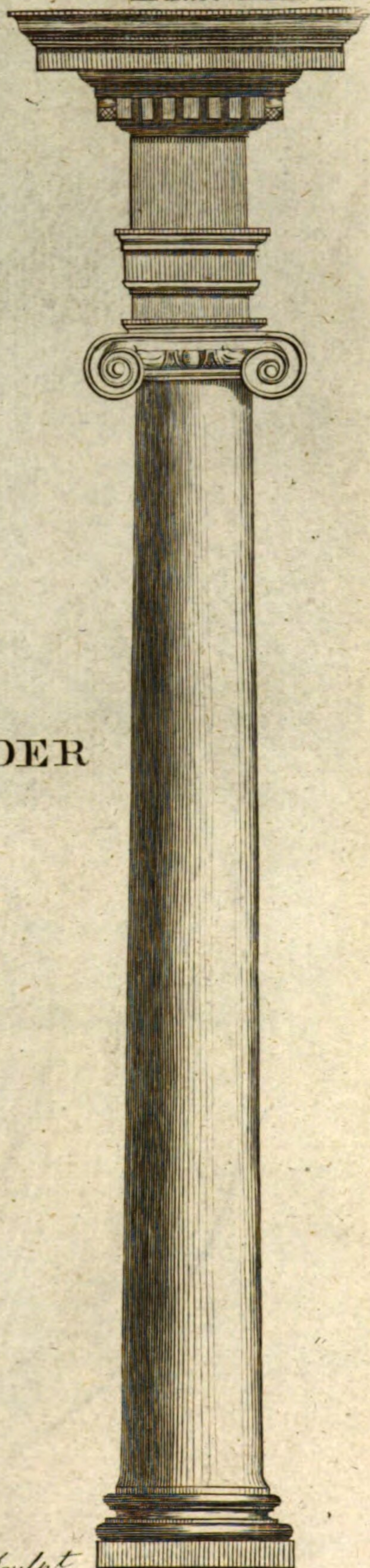
12 Minutes

10 Modules 9 Minutes

30 Minutes



The
IONIC ORDER



A Bell Sculp^t

ARCHITECTURE.

Plate. XXXVIII

Fig. 1.
Fillet List

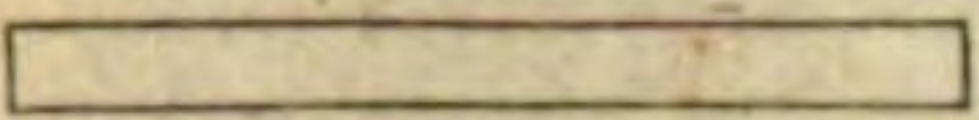


Fig. 2.
Astragal

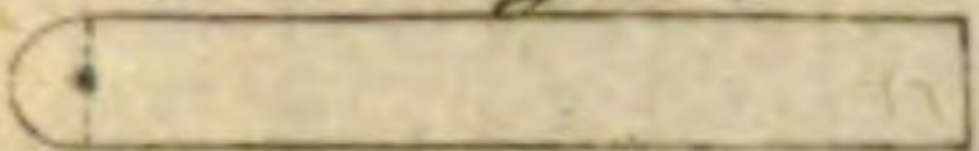


Fig. 3.
Torus

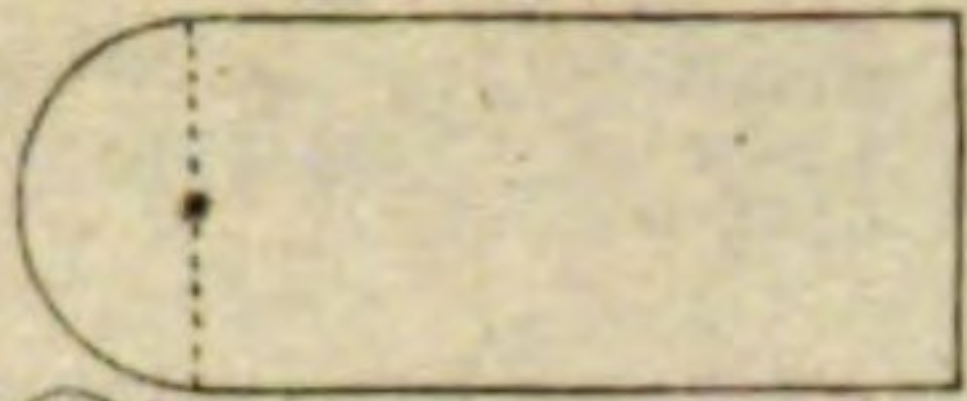


Fig. 4.
Scotia Mouth

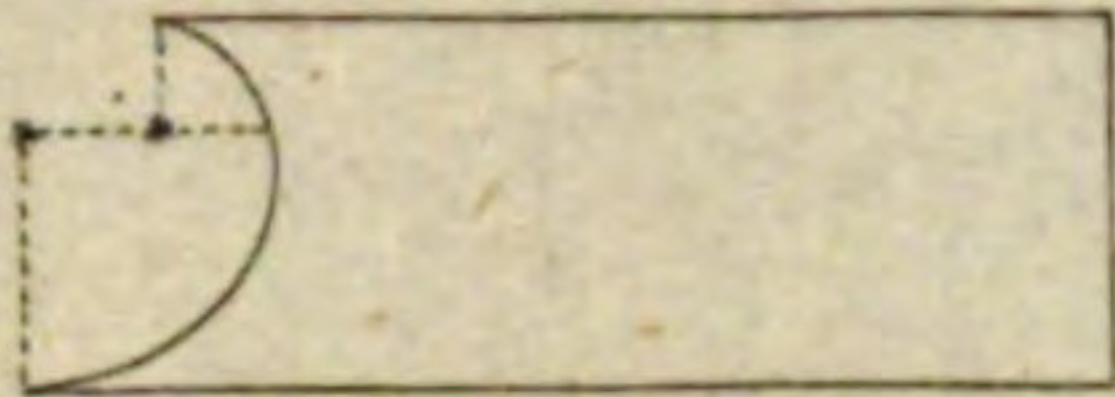


Fig. 5.
Ovolo

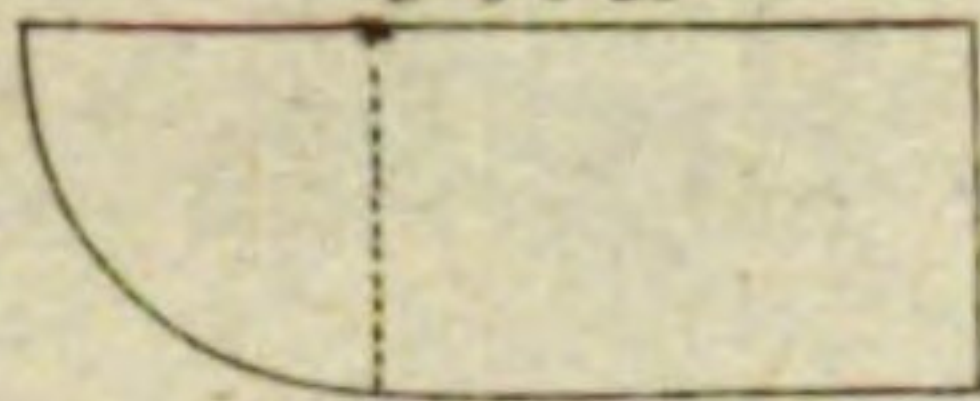


Fig. 6.
Ogee

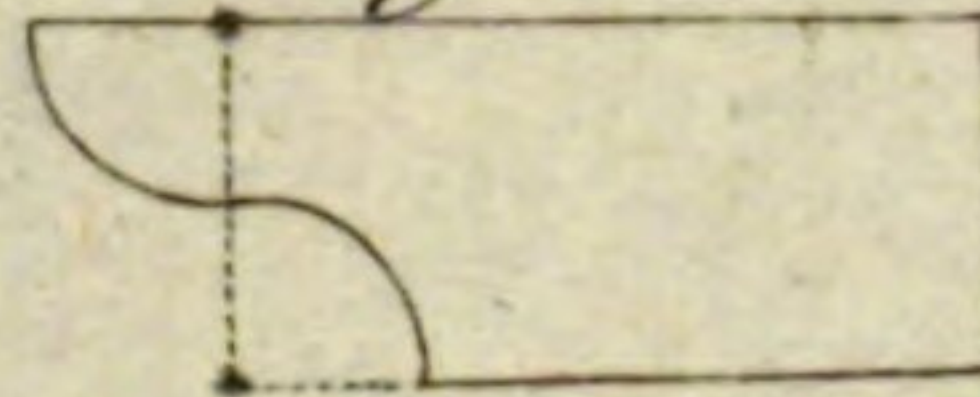


Fig. 7.
Cyma Recta

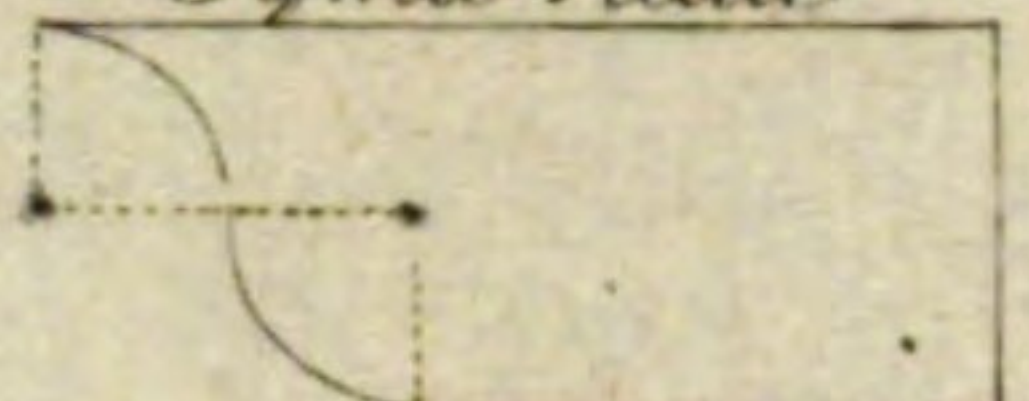


Fig. 8.
Cavetto

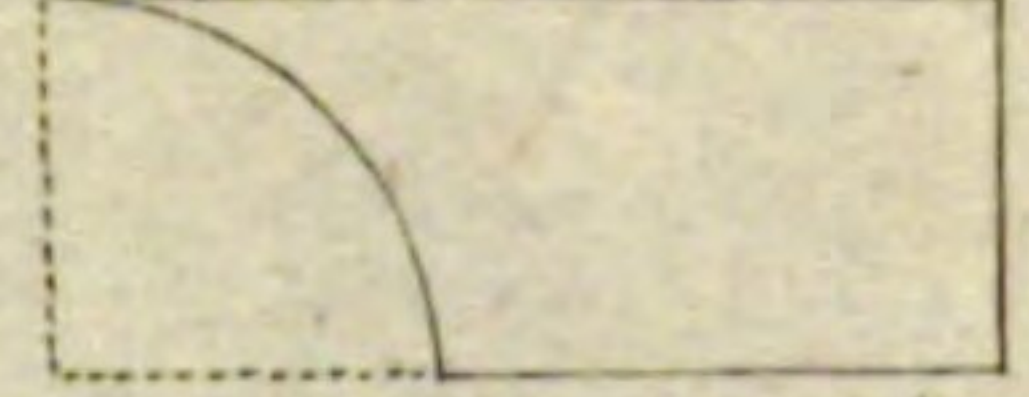


Fig. 9.
VOLUTE

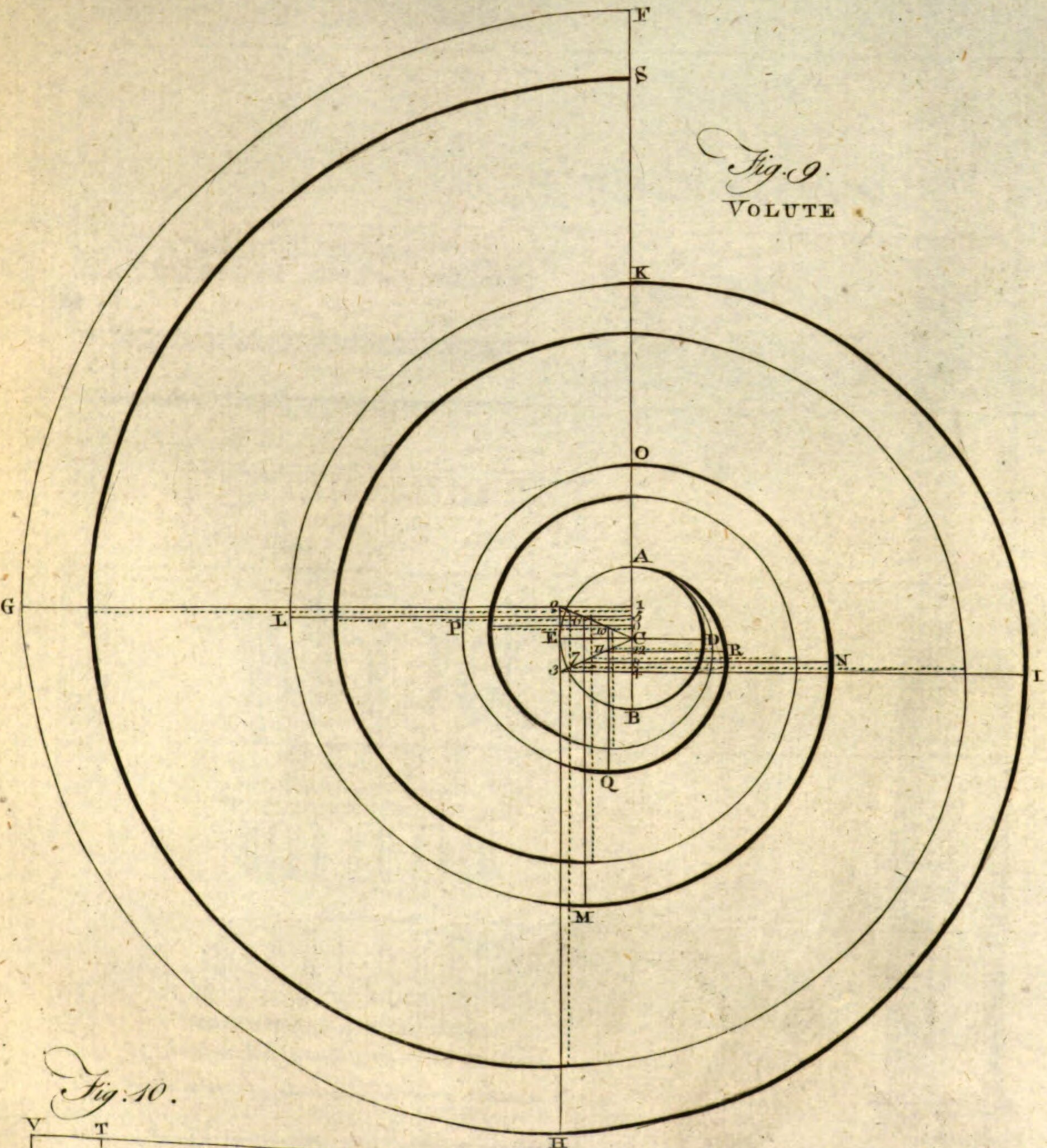
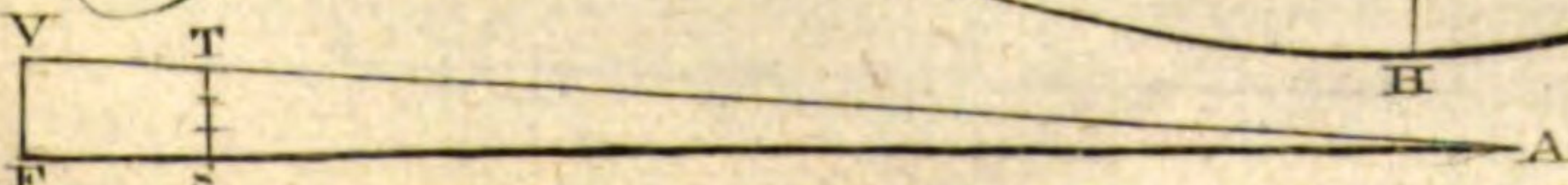


Fig. 10.



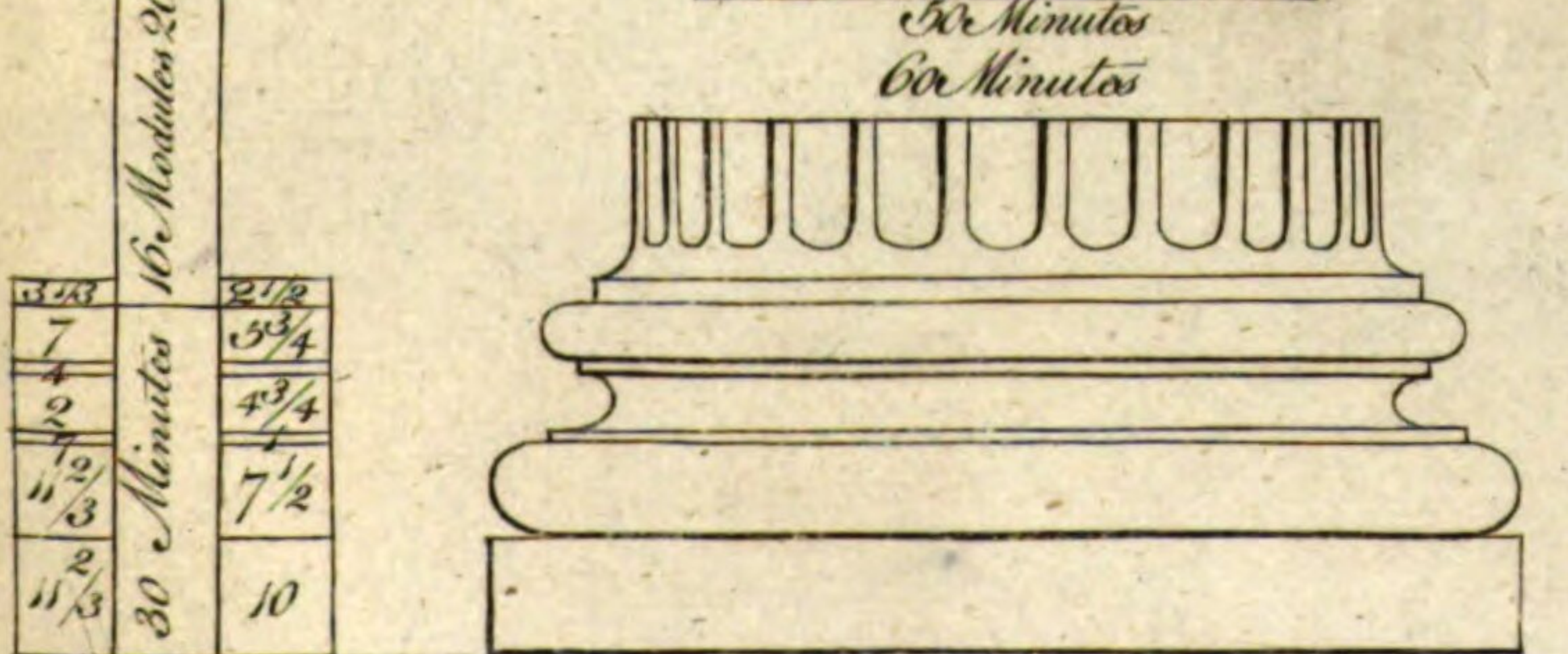
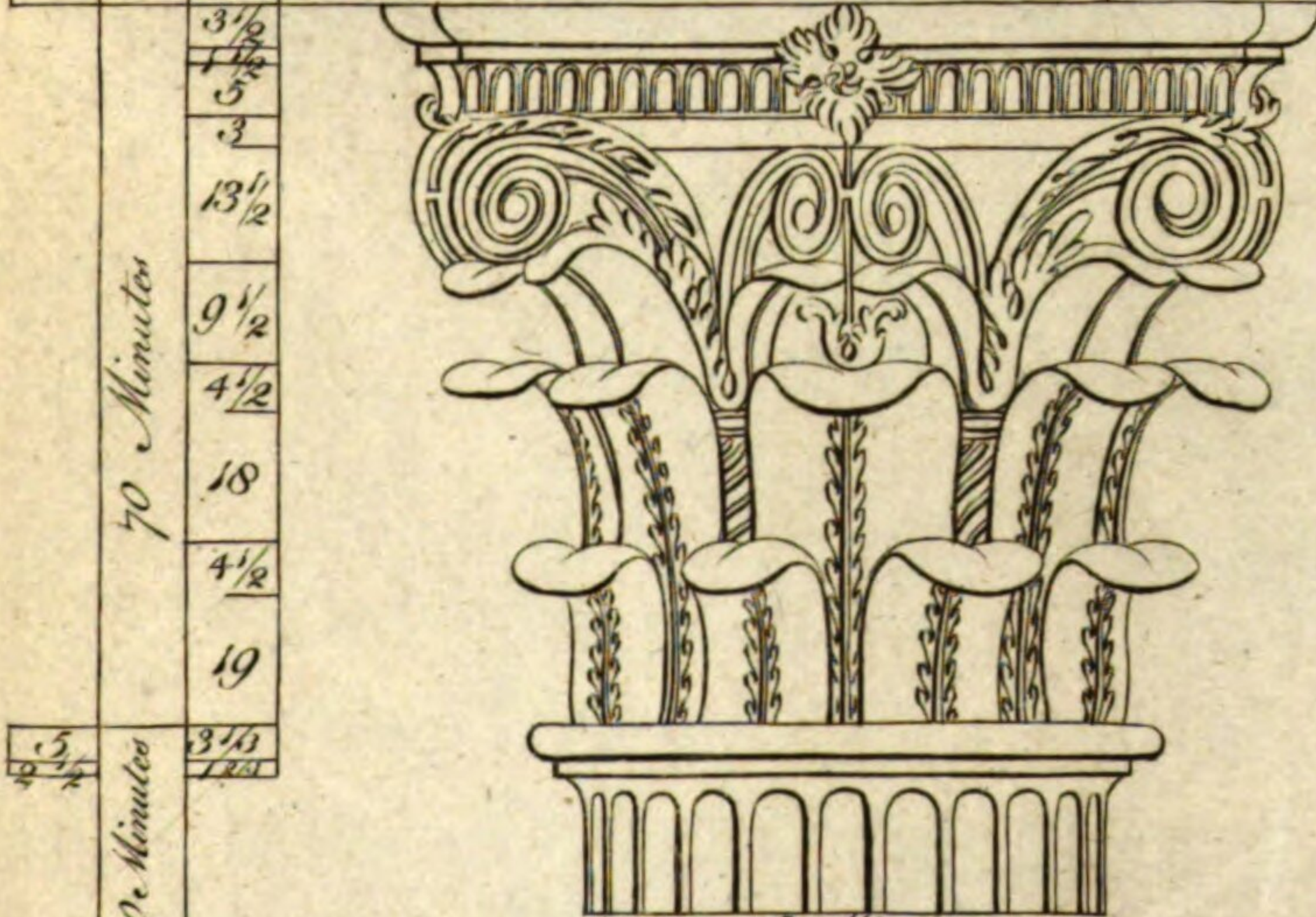
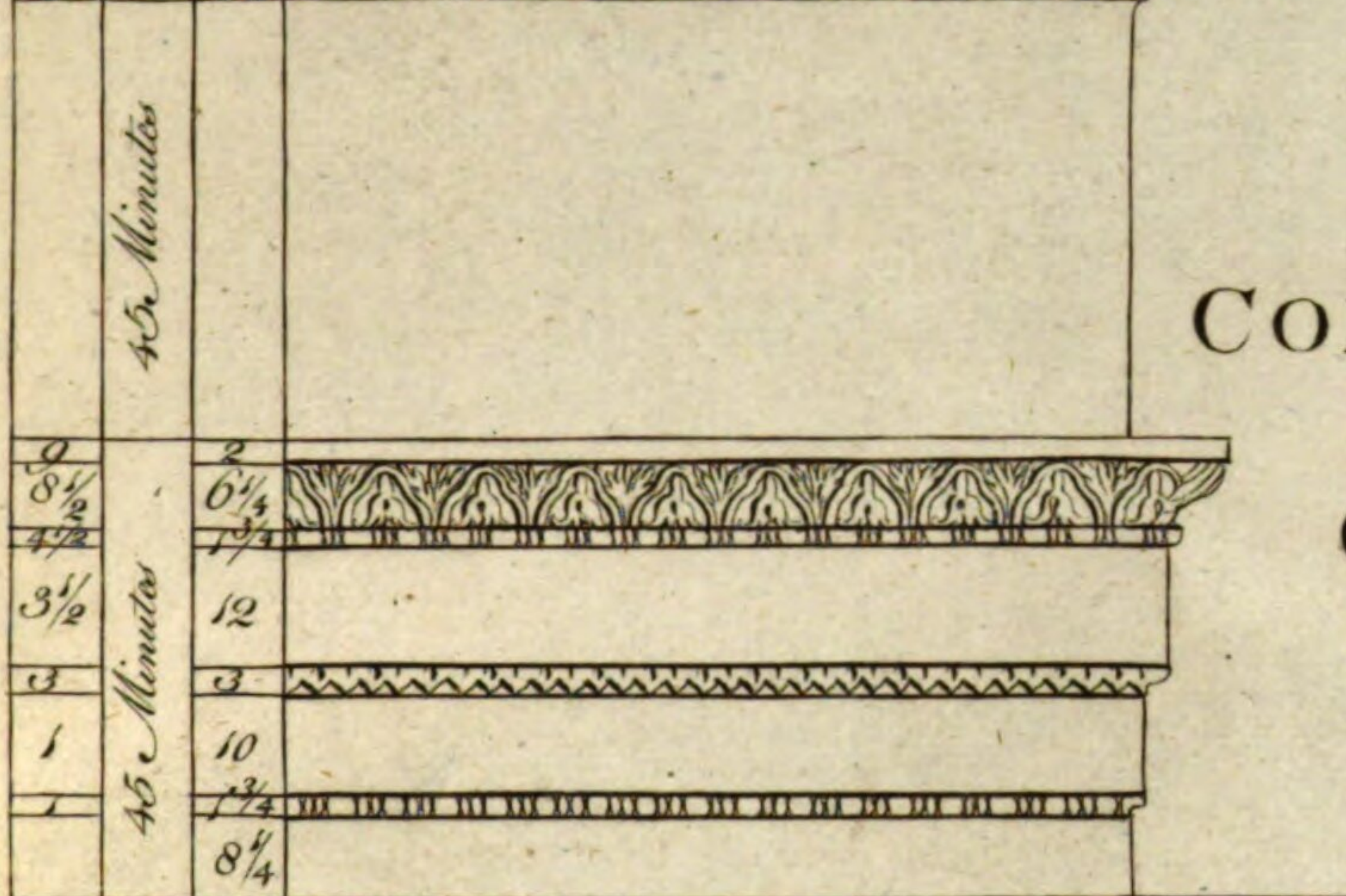
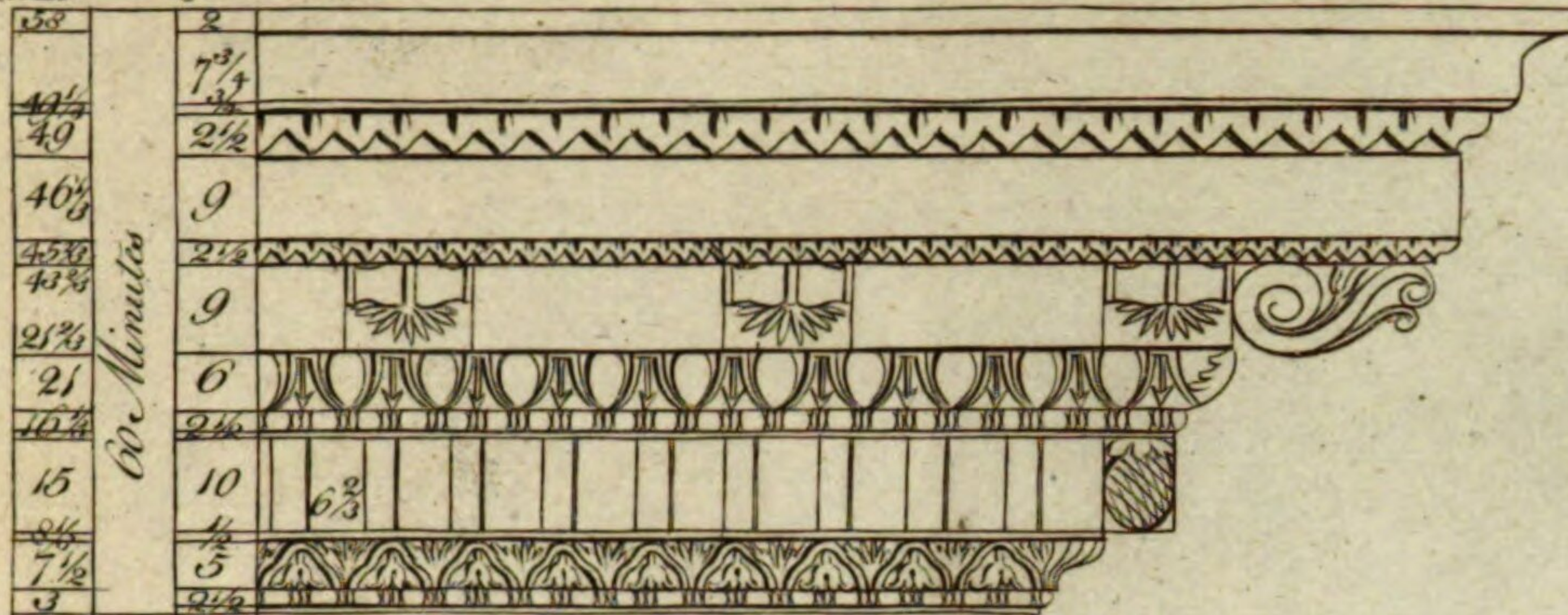
A. Bell Sculp.

Projections

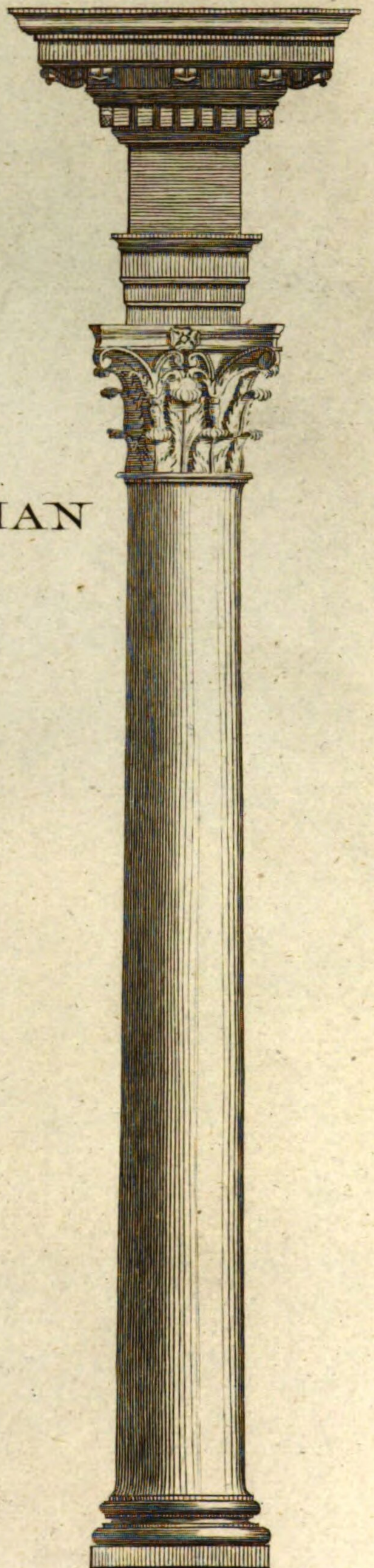
Hights

ARCHITECTURE.

Plate XXXIX.

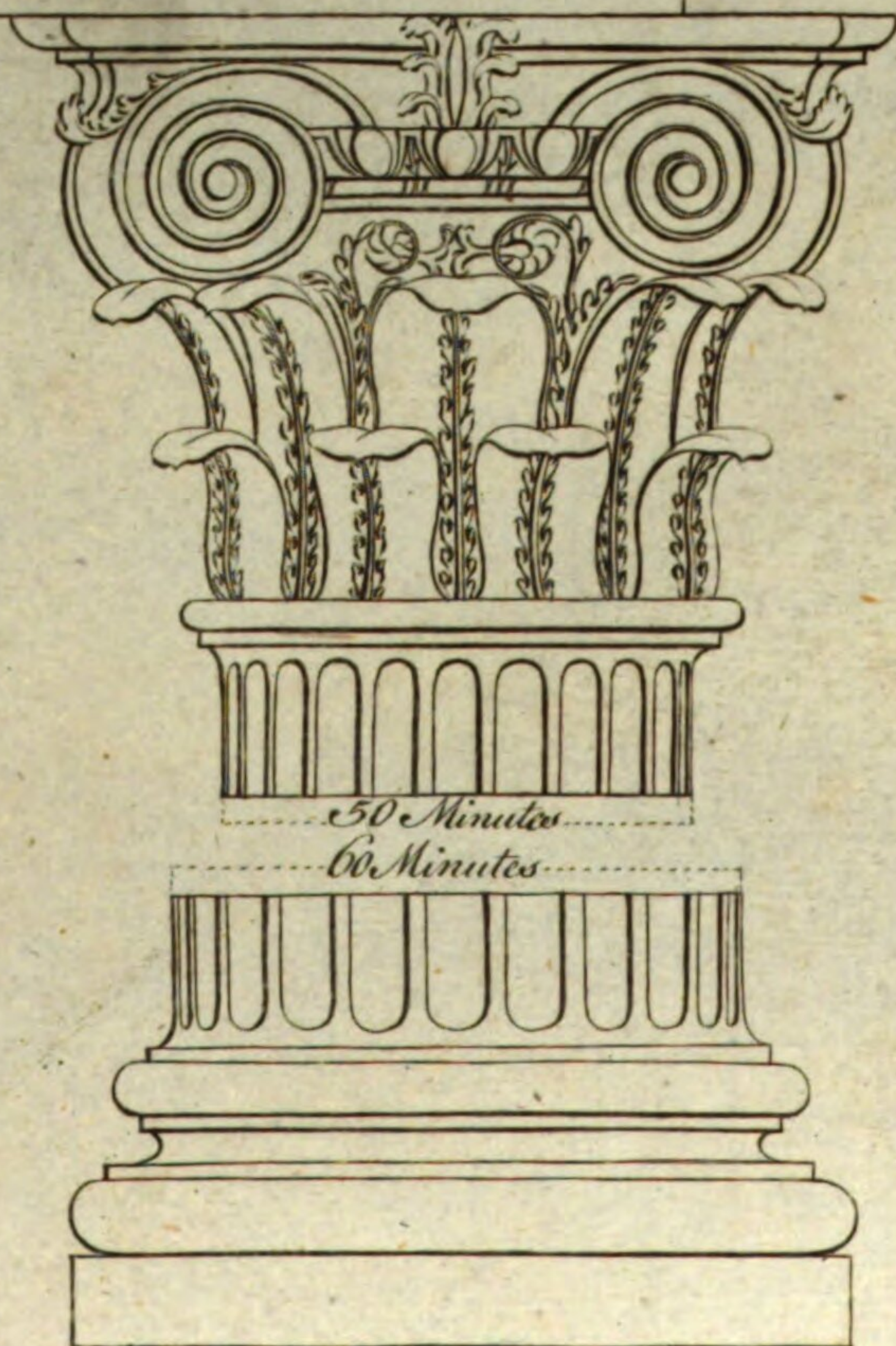


The CORINTHIAN ORDER

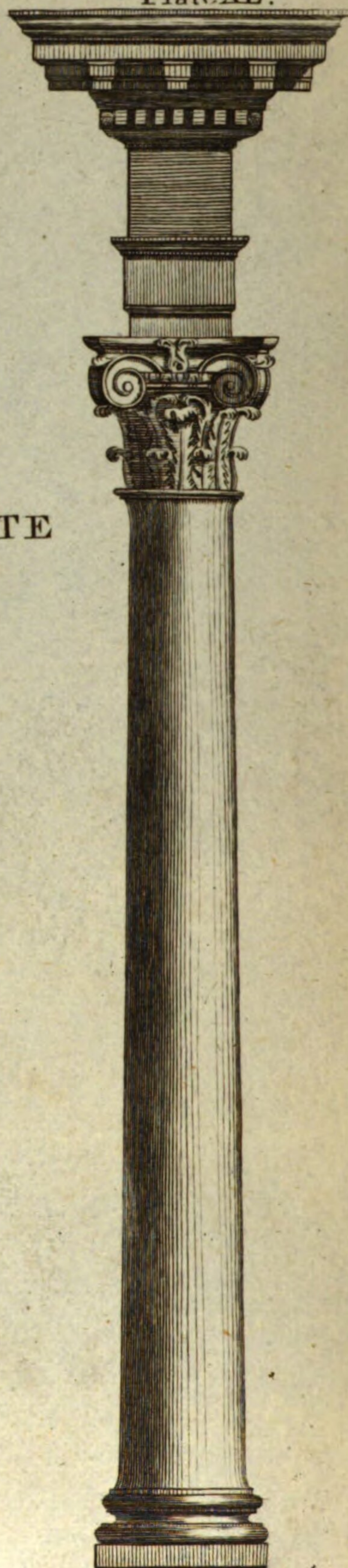


A. Bell Sculp.

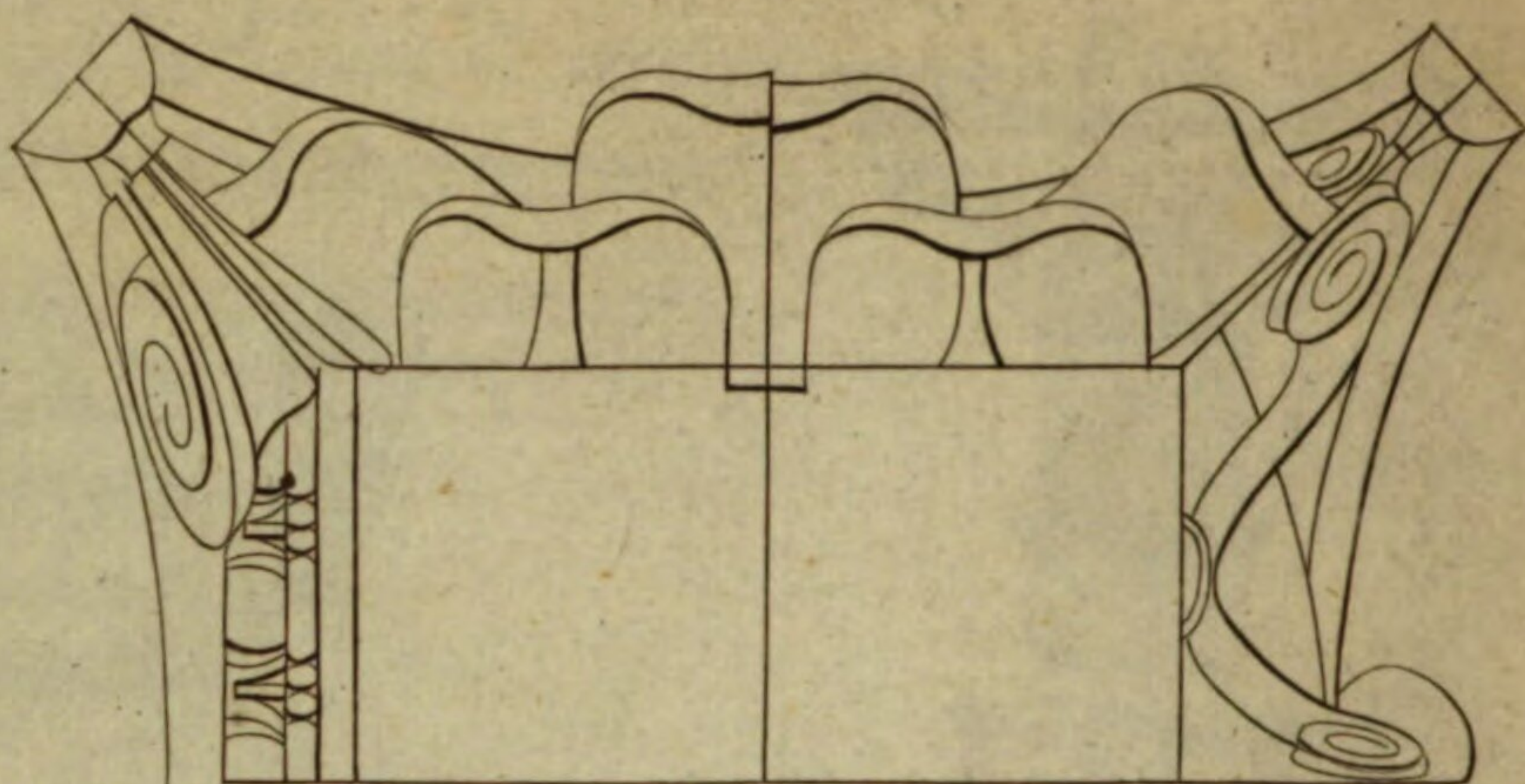
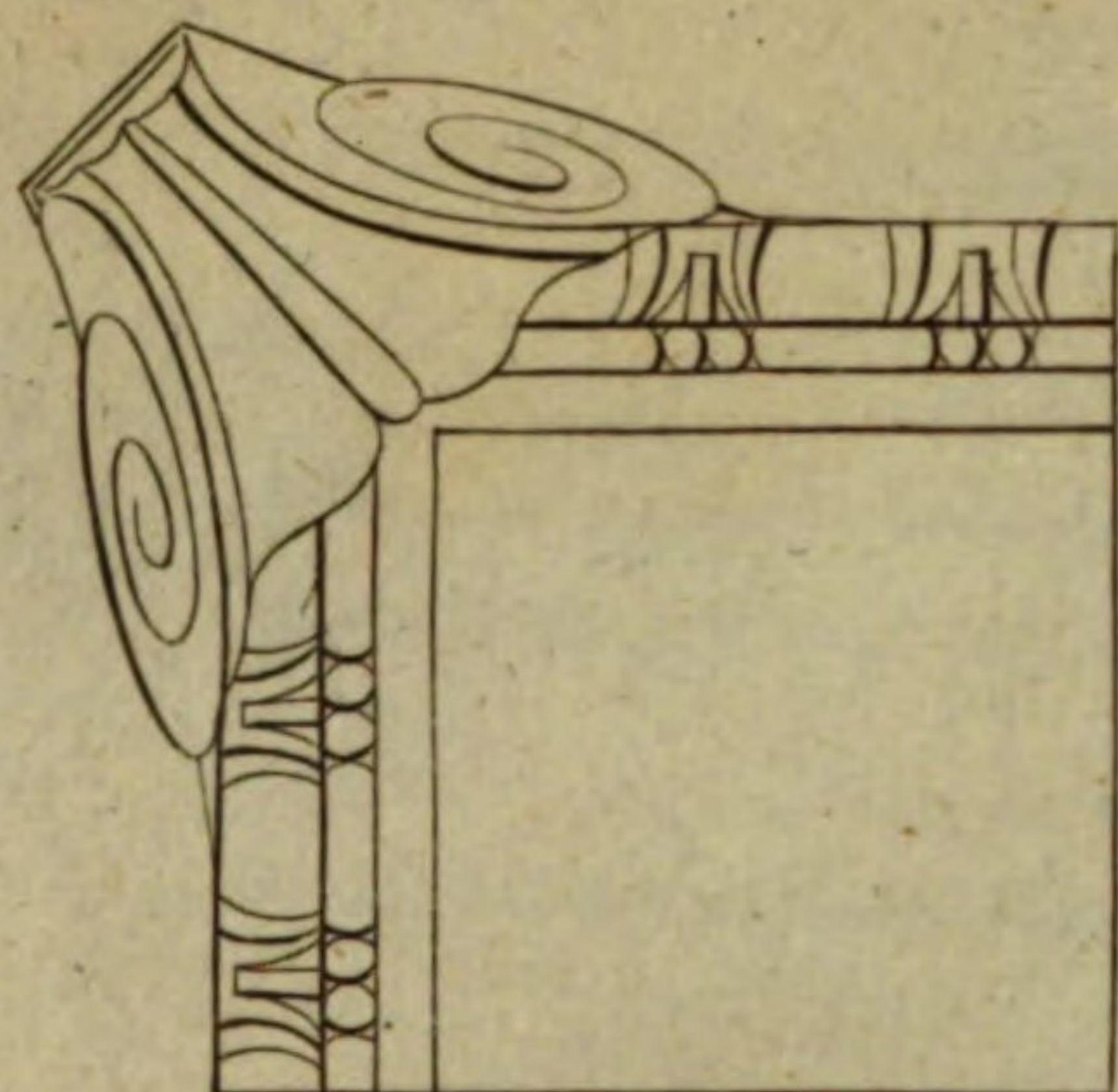
Projections	Heights
28	2
40 1/4	7 3/4
40	3 1/2
40 1/2	9
43	2 1/2
41	4 1/4
2 1/3	9
40	3 1/2
21	6
10 1/2	2 1/2
15	10 6 2/3
8 1/2	1 1/2
7 1/2	5
2	2 1/2
60 Minutes	
45 Minutes	
10 1/2	2
7 1/2	4
7	3 3/4
4	1 1/4
2 3/4	16 1/4
2 1/4	3 1/4
	14
45 Minutes	
70 Minutes	
	3 1/2
	1 1/2
	5
10	3
	7
4 1/4	2 1/2
	1 1/4
	5
	18 2/3
	5
	19 2/3
3	3 1/2
2 1/2	1 1/4
30 Minutes 60 Modules 20 Minutes	
3 1/2	2 1/2
7	5 3/4
5	4 1/4
7	1
11 2/3	7 1/2
11 2/3	10



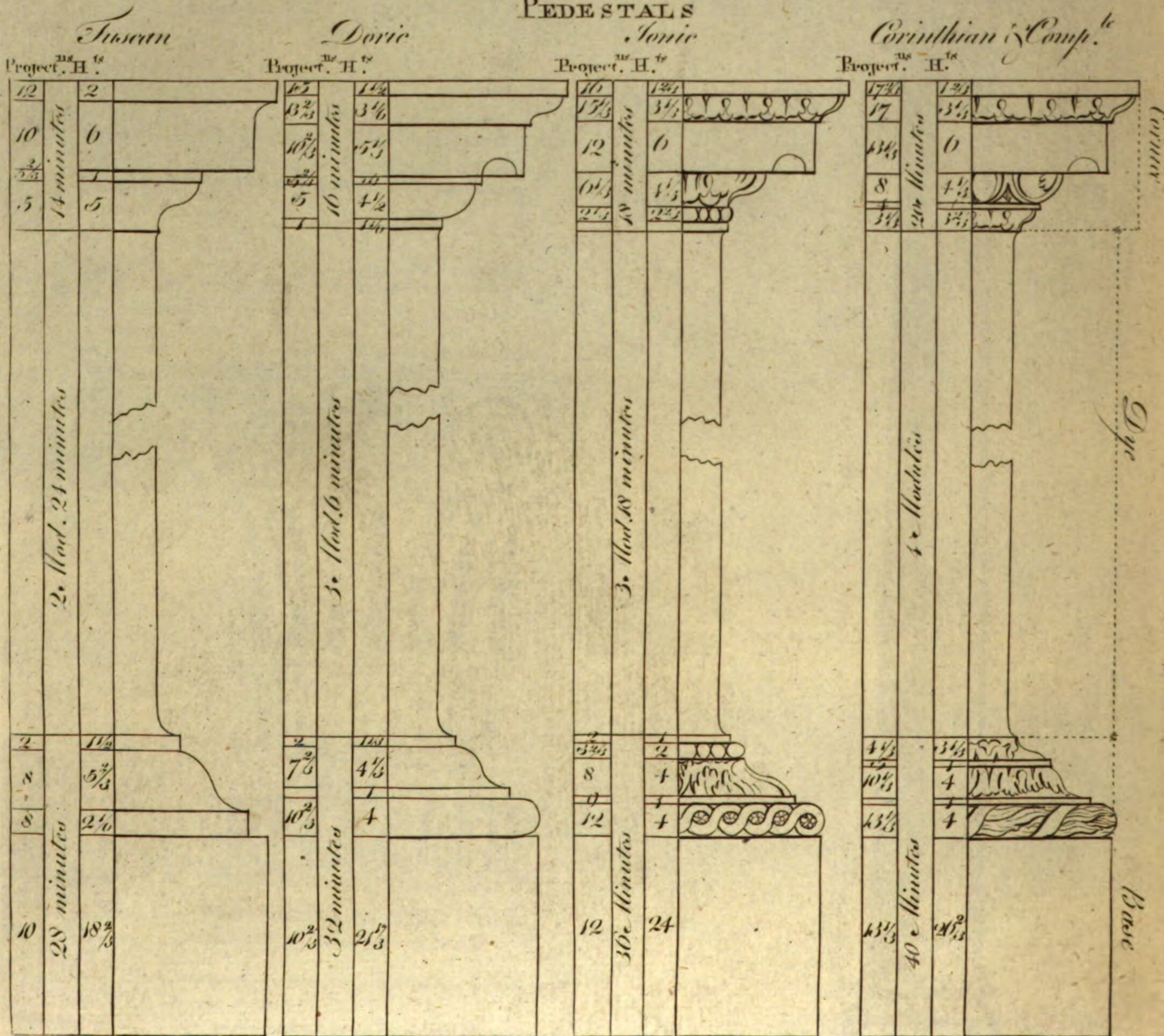
The
COMPOSITE
ORDER



A. Bell Sculp.



PEDESTALS
Ionic



Principles.

The Corinthian column should be 20 modules high, and the entablature 5; which proportions are a medium between those of the Pantheon and the three columns. The base of the column may be either Attic or Corinthian: They are both beautiful. If the entablature be enriched, the shaft may be fluted. The flutings may be filled, to one third of their height, with cabblings, as in the inside of the Pantheon; which will strengthen the lower part of the column, and make it less liable to injury.

In most of the antiques at Rome, the capital of this order is enriched with olive-leaves; the acanthus being seldom employed but in the Composite. De Cordemoy, however, prefers the acanthus.

The divisions of the entablature bear the same proportions to each other, as the Tuscan, Ionic, and Composite orders.

The Composite

48
Plate XL.

Is, strictly speaking, only a species of the Corinthian; and therefore retains, in a great measure, the same character.

49
Different kinds of ornaments.

It does not appear that the ancients affected any particular form of entablature to this order. Sometimes the cornice is entirely plain, as in the temple of Bacchus; at others, as in the arch of Septimius Severus, it is enriched with dentils differing very little from the Ionic; and in the arch of Titus, there are both dentils and modillions; the whole form of the profile being the same with the Corinthian, as executed in the antiques at Rome.

The modern architects have varied more in this than in any other order, each following the bent of his own fancy.

The height of the Composite column, and parts of the entablature, is the same with that of the Corinthian. The foot of the leaves of the capital ought not to project beyond the upper part of the shaft. The different bunches of leaves should be strongly marked; the sprigs which arise between the upper ones should be kept flat upon the vase; and the ornaments of the volutes must not project beyond the fillets that inclose them.

CHAP. II. Of Pilasters.

50

THESE differ from columns only in their plan; which is a square, as that of columns is round. Their bases, capitals, and entablatures, have the same parts, with the same heights and projections, as those of columns: they are also distinguished in the same manner, by the names of *Tuscan*, *Doric*, *Ionic*, *Corinthian*, and *Composite*.

The column is undoubtedly more perfect than the pilaster. However, they may be employed with great propriety on many occasions. Some authors declaim against pilasters, because, according to them, they do not admit of diminution. But this is a mistake; there are many instances, in the remains of antiquity, of their being diminished. Scamozzi always gave his pilasters the same diminution as his columns: Palladio and Inigo Jones have likewise diminished them in many of their buildings.

51
Pilasters where useful.

Pilasters are employed in churches, galleries, halls, and other interior decorations, to save room; for, as they seldom project beyond the solid wall above

one quarter of their diameter, they do not occupy near so much space as columns. They are likewise used in exterior decorations; sometimes alone, instead of columns, on account of their being less expensive; and sometimes they accompany columns, being placed behind them to support the architraves, where they enter the building, as in the Pantheon at Rome; or, in the same line with them, to fortify the angles, as in the portico of Septimius.

When pilasters are used alone, they should project one quarter of their diameter beyond the walls. When placed behind columns, especially if they be very near them, they need not project above one eighth of their diameter. But, when placed on a line with columns, their projection must be regulated by that of the columns; and consequently, it can never be less than a semidiameter, even when the columns are engaged as much as possible.

The shafts of pilasters are frequently adorned with flutings, in the same manner as those of columns; the plan of which may be a trifle more than a semicircle: their number must be seven on each face, which makes them nearly of the same size with those of columns. The intervals, or fillets, must either be one third or one fourth of the fluting in breadth.

The capitals of pilasters are profiled nearly in the same manner as those of columns.

CHAP. III. Of Attics.

53

THESE very properly follow the pilasters; being nothing more than square pillars with their cornices. They had their origin in Athens, where it was for many ages a rule in building to conceal the roof. For this purpose, nothing served so well as a kind of low or little order ranged in a continued line, singly, or with the interruption of balusters; which, rising above the rest of the work and before the roof, hid it perfectly, and placed something agreeable in view. The place of Attics, therefore, is at the uppermost extremity of a building, to which they serve as a crown, or very properly make a finishing for the other orders when they have been used in the structure. They must never stand under any thing except such ornaments as are placed at the very top. These Attics should never exceed in height one third of the height of the order on which they are placed, nor be less than one quarter of it. The base, dye, and cornice, of which they are composed, may bear the same proportions to each other as those of pedestals do; and the base and cornice may be composed of the same mouldings as those pedestals. Sometimes the Attic is continued throughout; at others, it projects, and forms a pilaster over each column of the order. The breadth of this pilaster is seldom made narrower than the upper diameter of the column below it, and never broader. Its projection may be equal to one quarter of its breadth.

CHAP. IV. Of Persians, Caryatides, and Termini.

54

BESIDES columns and pilasters, it is sometimes customary to employ representations of the human figure, to support entablatures in buildings. The male figures are called *Persians*; and the female, *Caryatides*, or *Termini*.

The

Principles.

52

How ornamented.

Plate XLI.

Principles.

55
Origin of
Persians.

The *Persians* are so called from a victory gained over the Persians by Pausanias, who having brought home spoils and trophies to the Athenians, they fixed upon Persian figures for those which should support entablatures, and thus kept in mind that there were once Persian slaves in Athens. To represent these conquered people in the lowest state possible, they loaded them with the heaviest entablature, viz. that of the Doric order. In process of time, however, other figures besides those of Persians were introduced, and other entablatures put over them; but the name was still retained.

56
Of Caryatides.

The proper Caryatides are women dressed in long robes, after the Asiatic manner; and the origin of the device was as follows.—The Carians had been long at war with the Athenians; but being at length totally vanquished, their wives were led away captives; and, to perpetuate the memory of this event, trophies were erected, in which figures of women dressed in the Caryatic manner, were used to support entablatures like the Persians; and though other female figures were afterwards used in the same manner, the name of *Caryatides* was always retained.

The ancients made frequent use of Persians and Caryatides, and delighted in diversifying them a thousand ways. The modern artists have followed their example; and there is a great variety of compositions of this kind to be met with in different parts of Europe.

Indecent attitudes, distorted features, and all monstrous productions, ought to be avoided, of which there are many examples in Gothic buildings. On the contrary, the attitudes should be simple and graceful, the countenance always pleasing, though varied and strongly marked agreeable to the nature of the object represented.

57
Their proportions, &c.

The Caryatides, or female figures, should never much exceed the human size. But the Persians or male figures may be of any size; and the larger the better, as they will strike the beholder with the greater awe and astonishment. Persians may be used with propriety in arsenals, galleries of armour, &c. under the figures of captives, heroic virtues, &c. Their entablature ought to be Doric, and bear the same proportion to them as to columns of the same height. The entablature for Caryatides ought to be either Ionic or Corinthian, according as the character of the figures is more or less delicate.

58
Termini.

Termini are sometimes employed, instead of Persians or Caryatides, to support the entablatures of monuments, chimney-pieces, and such like compositions. These figures owe their origin to the stones used by the ancients to mark the limits of particular possessions. Numa Pompilius, to render these inviolable, consecrated the terminus into a deity, and instituted festivals and sacrifices to his honour. In a short time, what was formerly only large upright stones, were represented in human shape; and afterwards introduced as ornaments to temples and other buildings. The termini are now principally used as ornaments for gardens and fields.

CHAP. V. Of Pedestals.

59

Most writers consider the Pedestal as a necessary part of the order, without which it is not complete.

It is indeed a matter of little importance whether it be considered in that light, or as a distinct composition: we shall therefore treat of a pedestal as a distinct body, having no more connection with the order than an attic, a basement, or any other part with which it may on some occasions be associated.

A pedestal consists of three principal parts: the base, the dye, and the cornice. The dye is always nearly of the same figure; being constantly either a cube or a parallelopipedon: but the base and cornice are varied and adorned with more or fewer mouldings, according to the simplicity or richness of the composition in which the pedestal is employed. Hence pedestals are, like columns, distinguished by the names of *Tuscan*, *Doric*, *Ionic*, *Corinthian*, and *Composite*.

Some authors are averse to pedestals, and compare a column raised on a pedestal to a man mounted on stilts; imagining that they were introduced merely from necessity, and for want of columns of a sufficient length. It is indeed true, that the ancients often made use of artifices to lengthen their columns; as appears by some that are in the Baptistry of Constantine at Rome; the shafts of which, being too short for the building, were lengthened and joined to their bases by an undulated sweep, adorned with acanthus leaves. Nevertheless, there are many occasions where pedestals are evidently necessary; and some in which the order, were it not so raised, would lose much of its beautiful appearance. Thus, in the insides of churches, if the columns that support the vault were placed immediately on the ground, the seats would hide their bases and a good part of their shafts; and in the theatres of the ancients, if the columns of the scene had been placed immediately on the stage, the actors would have hid a part of them from the audience. In anterior decorations, a pedestal diminishes the parts of the order, which otherwise might perhaps appear too clumsy, and hath the advantage of placing the column in a more favourable view, by raising its base nearer the level of the spectator's eye. In a second order of arcades, there is no avoiding pedestals; as without them it is impossible to give the arches any tolerable proportion.

With regard to the proportion that pedestals ought to bear to that of the columns they support, it is by no means fixed. Both the ancients and moderns vary greatly on this head. Vignola's proportions are generally reckoned the best. He makes his pedestals in all the orders of the same height, viz. one third of the column; and as their breadth of course increases or diminishes in the same degree as the diameters of their respective columns do, the character of the order is always preserved, which, according to any other method, is impossible.

As to the divisions of the pedestals; if the whole height be divided into nine parts, one of them may be given to the height of the cornice, two to the base, and the six remaining to the dye. The breadth of the dye is always made equal to that of the plinth of the column. The projection of the cornice may be made equal to its height; and the base being divided into three parts, two of them will be for the height of the plinth, and one for the mouldings, whose projection must be less than that of the cornice. These measures

Principles.

60
Pedestals
where pro-61
Their proportions.

Principles. measures are common to all pedestals. See Plate
XLI.

62

CHAP. VI. *Of Intercolumniations.*

COLUMNS are either engaged or insulated; and, when insulated, are either very near the wall, or at a considerable distance from it. Engaged columns, or such as are near the walls of a building, are not limited in their intercolumniations, as these depend on the breadths of the arches, windows, niches, or other decorations placed between the columns. But columns that are entirely detached, and perform alone the office of supporting the entablature, as in peristyles, porches, and galleries, must be near each other, for the sake both of real and apparent solidity.

63
Different
intercolumniations
used by the
ancients.

The intercolumniations among the ancients were various. Those used in the Ionic and Corinthian orders were the pycnostyle, of which the interval was equal to one diameter and a half of the column; the systyle, whose interval was equal to two diameters: the eustyle, to two and a quarter; the diastyle to three, and the aræostyle to four. In the Doric order, they used other intercolumniations, regulating them by the triglyphs, one of which was always placed directly over the middle of each column; so that they were either systyle, monotriglyph, of one diameter and a half; diastyle, of two diameters and three quarters; or aræostyle, of four diameters; and the Tuscan intervals were very wide, some of them being above seven diameters, which was very practicable, as the architraves were of wood.

Among these different intercolumniations, the pycnostyle and systyle are too narrow; for although the ancients made frequent use of them, that ought rather to be ascribed to necessity than choice. For as the architraves were composed of single stones, extending from the middle of one column to the middle of another, it would have been difficult, especially in large buildings, to find blocks of a sufficient length for diastyle intervals. With regard to the aræostyle and Tuscan intercolumniations, they are by much too wide, and can only be used in rustic buildings, where the architraves are of wood; neither is the diastyle sufficiently solid in large compositions. The eustyle is a medium between the narrow and broad intervals; and being at the same time both spacious and solid, hath been preferred to any of the rest by the ancients as well as the moderns.

64
Used by
Vignola.

Vignola observed nearly the same proportion in all his intercolumniations; which practice, though condemned by several writers, is certainly preferable to any other; as it preserves the character of each order, and maintains in all of them an equal degree of real solidity. Setting aside therefore the pycnostyle and systyle dispositions on account of their want of space, and the aræostyle for its deficiency in point of strength, it may be established, that the diastyle and eustyle intercolumniations (the latter of which, on most occasions, ought to have the preference) may be employed in all the orders without distinction, excepting the Doric; in which the most perfect interval is ditriglyph; neither the monotriglyph, nor the aræostyle, being to be suffered but in cases of necessity.

Sometimes, on account of the windows, doors, niches, and other decorations, which correspond with

the intercolumniations of the peristyle, or gallery, it is not possible to make the intervals so narrow as eustyle, or even as diastyle: wherefore the moderns, authorized by some few examples of the ancients, where grouped columns are employed, have invented a manner of disposing them, called by Perrault *aræostyle*, which admits of a larger interval, without any detriment to the apparent solidity of the building. This kind of disposition is composed of two systyle intercolumniations; the column that separates them being approached towards one of those at the extremities, sufficient room only being left between them for the projection of the capitals; so that the great space is three diameters and a half wide, and the little one half a diameter.

In peristyles, galleries, or porticos, all the intercolumniations must be equal; but in a logio, or porch, the middle interval may be broader than the others, by a triglyph or modilion, or three or four dentils; unless the columns at the angles be coupled or grouped with pilasters; in which case, all the intervals should be of the same dimensions.

When buildings are very small, as is frequently the case in temples and other inventions used for ornamenting gardens, the intercolumniations may be broader, in proportion to the diameter of the columns, than usual; because, when they are nearer each other than three feet, there is hardly room for a bulky person to pass between them.

CHAP. VII. *Of Arches.*

ARCHES are not so magnificent as colonnades; but they are more solid and less expensive. They are proper for triumphal entrances, gates of cities, of palaces, of gardens, and of parks, and, in general, for all openings that require an extraordinary breadth.

There are various manners of adorning arches. Sometimes their piers are rusticated; sometimes they are adorned with pilasters, termini, or caryatides; and sometimes they are made sufficiently broad to admit niches or windows. The circular part of the arch is either surrounded with rustic key-stones, or with an archivolt enriched with mouldings; which, in the middle, is sometimes interrupted by a console, a mask, serving at the same time as a key to the arch, and as a support to the architrave of the order. The archivolt is sometimes supported by an impost, at the head of the pier; and at others by columns placed on each side of it, with a regular entablature, or architrave and cornice. There are likewise instances of arcades without piers, the arches being turned on single columns as in the temple of Faunus at Rome, &c. This practice, however, ought to be seldom imitated, as it is neither solid nor handsome.

When arches are large, the key-stone should never be omitted, but cut in the form of a console, and carried close under the soffit of the architrave, which, on account of its extraordinary length, requires a support in the middle. The imposts of arches should never be omitted; at least, if they be, a platform ought to supply their place. If columns are employed without pedestals in arcades, they should always be raised on a plinth. In all arches, the circular part ought not to spring immediately from the impost, but take

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Proportions.

take its rise at such a distance above it as is necessary in order to have the whole curve seen at the proper point of view.

The void or aperture of arches should never be higher, nor much lower, than double their breadth; the breadth of the pier should seldom exceed two-thirds, nor be less than one-third, of the breadth of the arch; and the angular pier ought to be broader than the others, by one-half, one-third, or one-fourth; the impost should not be more than one-seventh, nor less than one-ninth of the aperture; and the archivolt must not be more than one-eighth, nor less than one-tenth of it. The breadth of the console must, at the bottom, be equal to that of the archivolt; and its sides must be drawn from the centre of the arch: the length of it must not be less than one and a half of its smallest breadth, nor more than double. The thickness of the pier depends on the breadth of the portico; for it must be strong enough to resist the pressure of its vault. But with regard to the beauty of the building, it should not be less than one quarter of the breadth of the arch, nor more than one-third. These are the general dimensions of arches.

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CHAP. VIII. *Of Orders above Orders.*

WHEN, in a building, two or more orders are employed, one above another, the laws of solidity require the strongest should be placed lowermost. Hence the Tuscan must support the Doric, the Doric the Ionic, the Ionic the Composite or Corinthian, and the Composite the Corinthian.

This rule, however, is not always strictly adhered to. Most authors place the Composite above the Corinthian. There are likewise examples where the same order is repeated, as in the theatre of Statilus Taurus, and the Coliseum; and others, where an intermediate order is omitted, and the Ionic placed on the Tuscan, or the Corinthian on the Doric. But none of these practices ought to be imitated.

In placing columns above one another, the axis of all the columns ought to correspond, or be in the same perpendicular line, at least in front.

69
Proportions of columns placed above each other.

With regard to the proportions of columns placed above each other, Scamozzi's rule, That the lower diameter of the superior column should constantly be equal to the upper diameter of the inferior one, is universally esteemed the best, and gives all the columns the appearance of one long tapering tree, cut into several pieces. According to this rule, the Doric column will be to the Tuscan, as $13\frac{1}{2}$ to 14; the Ionic to the Doric, as 15 to 16; the Composite or Corinthian to the Ionic, as $16\frac{1}{2}$ to 18; and the Corinthian to the Composite, as $16\frac{1}{2}$ to 20.

In Britain there are few examples of more than two stories of columns in the same aspect; and though in Italy, and other parts of Europe, we frequently meet with three, and sometimes more, yet it is a practice by no means to be imitated; for there is no possibility of avoiding many striking inconsistencies, or of preserving the character of each order in its intercolumnial decorations.

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CHAP. IX. *Of Basements.*

INSTEAD of employing several orders one above the other in a composition, the ground-floor is sometimes

made in the form of a *basement*, on which the order that decorates the principal story is placed. The proportion of these basements is not fixed, but depends on the nature of the rooms on the ground-floor. In the palace of the Porti in Vicenza, the height of the basement is equal to that of the order. In some buildings, its height exceeds two-thirds of that of the order; and, in others, only half the height of the order. It is not, however, advisable to make the basement higher than the order it supports: neither should it be lower than one-half of the order.

The usual method of decorating basements is with rustics of different kinds. The best, where neatness and finishing is aimed at, are such as have a smooth surface. Their height, including the joint, should never be less, nor much more, than half a module of the order placed on the basement. Their figure may be from a square to a sesquialtera; and their joints may be either square or chamfered. The square ones should not be broader than one-eighth of the height of the rustic, nor narrower than one-tenth; and their depth must be equal to their breadth; those that are chamfered must form a rectangle; and the breadth of the whole joint may be from one-fourth to one-third of the height of the flat surface of the rustic.

Principles.

71
Decorations, &c. of basements.

CHAP. X. *Of Pediments.*

72

PEDIMENTS, among the Romans, were used only as coverings to their sacred buildings, till Cæsar obtained leave to cover his house with a pointed roof, after the manner of temples. In the remains of antiquity we meet with two kinds of pediments, the triangular and the circular. The former of these are promiscuously applied to cover small or large bodies: But the latter, being of a heavier figure, are never used but as coverings to doors, niches, windows, or gates.

As a pediment represents the roof, it should never be employed but as a finishing to the whole composition.

The ancients introduced but few pediments into their buildings, usually contenting themselves with a single one to adorn the middle or principal part. But some of the moderns, and particularly the Italians, have been so immoderately fond of them, that their buildings frequently consist of almost nothing else.

The girder being a necessary part in the construction of a roof, it is an impropriety to intermit the horizontal entablature of a pediment, by which it is represented, to make room for a niche, an arch, or a window.

In regular architecture, no other form of pediments can be admitted besides the triangular and circular. Both of them are beautiful; and when a considerable number of pediments are introduced, as when a range of windows are adorned with them, these two figures may be used alternately, as in the niches of the Pantheon, and in those of the temple of Diana at Nismes.

The proportion of pediments depends upon their size; for the same proportions will not do in all cases.

When the base of the pediment is short, its height must be increased; and when the pediment is long, the height must be diminished. The best proportion for

73
Forms, &c. of pediments.

Fig. 1.

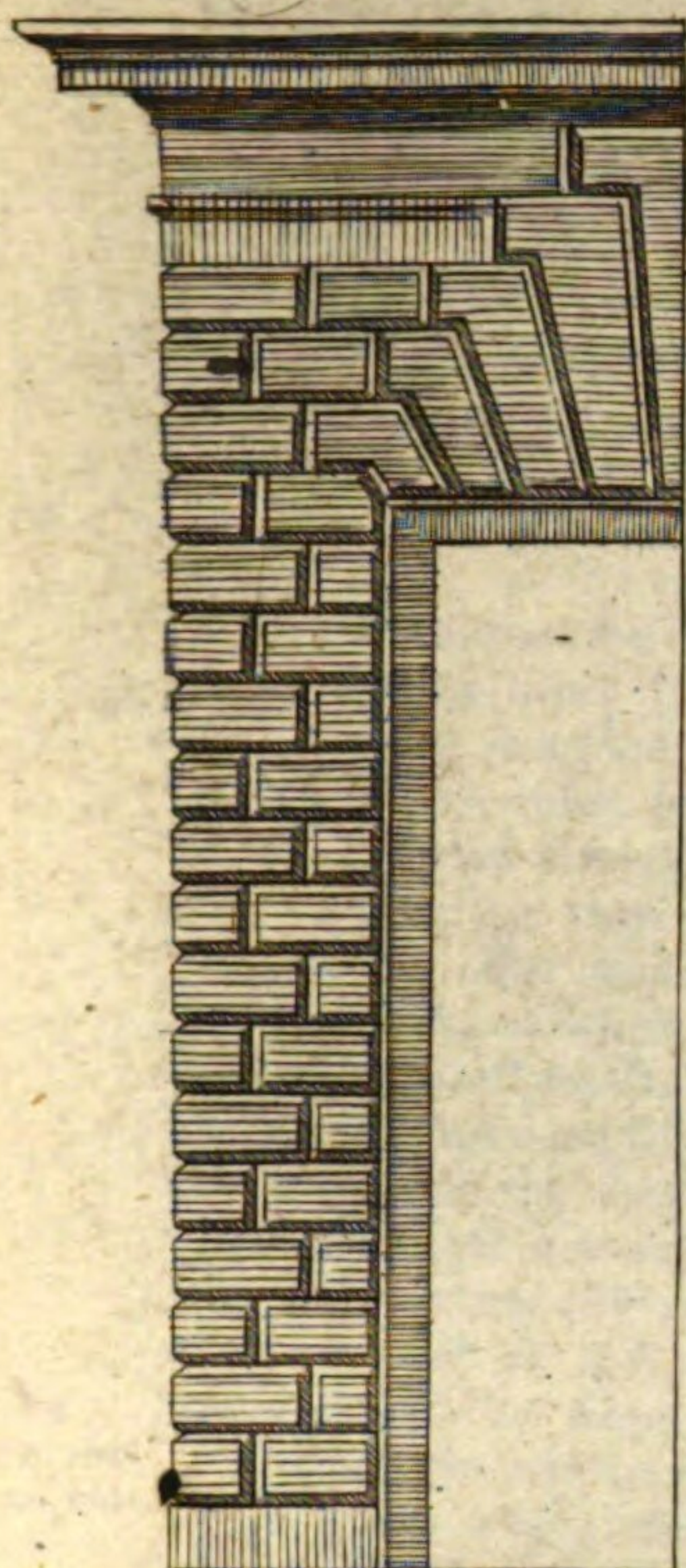


Fig. 2.

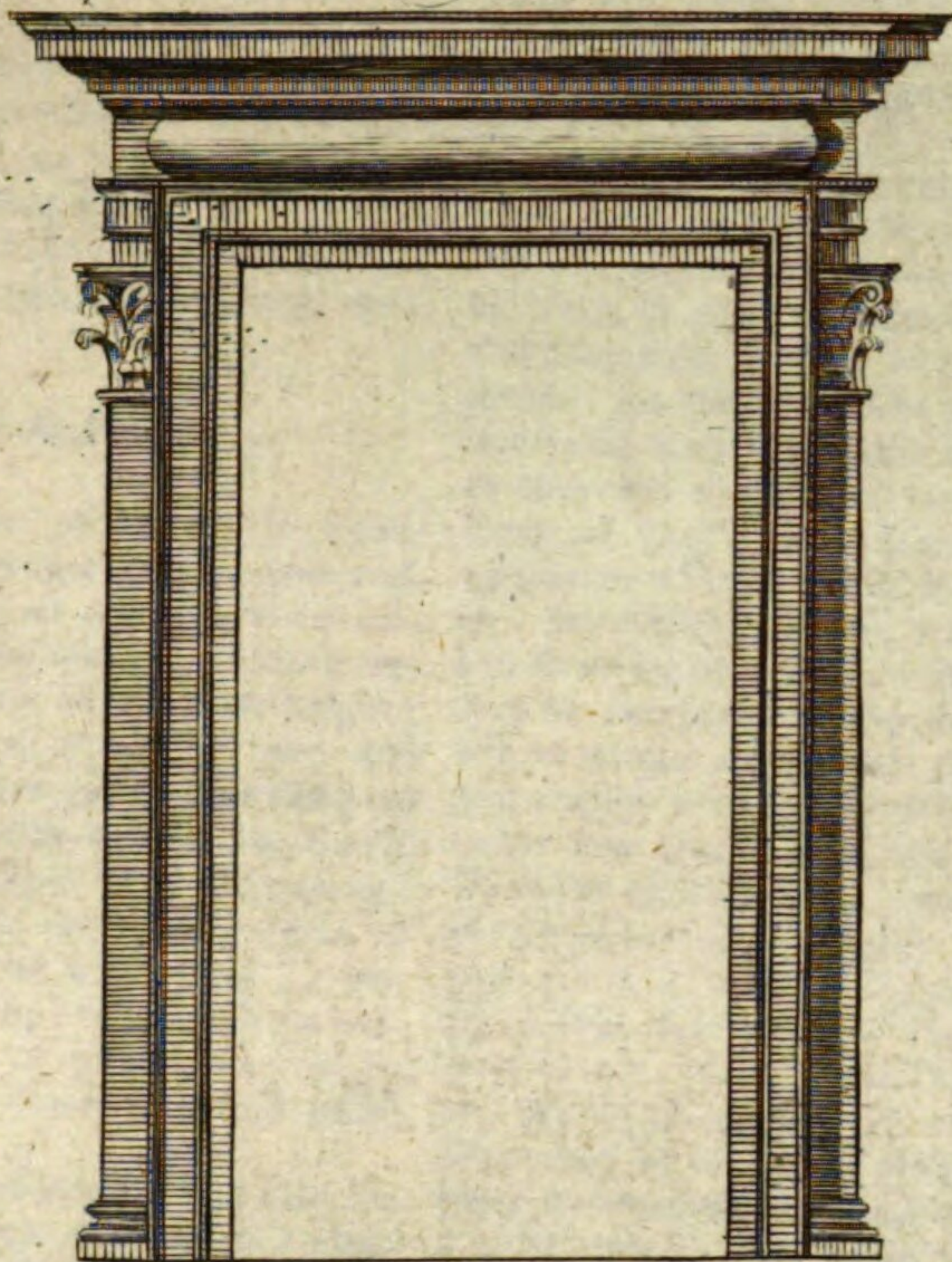


Fig. 3.

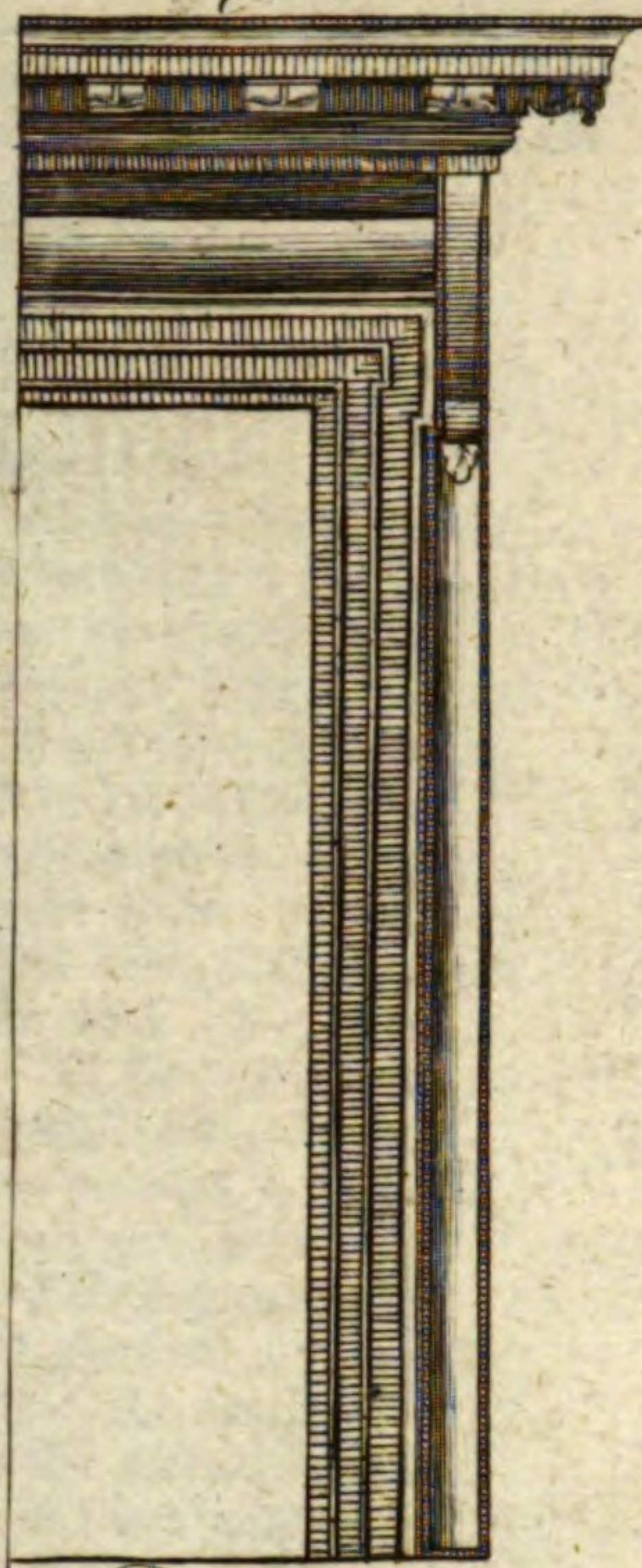


Fig. 4.

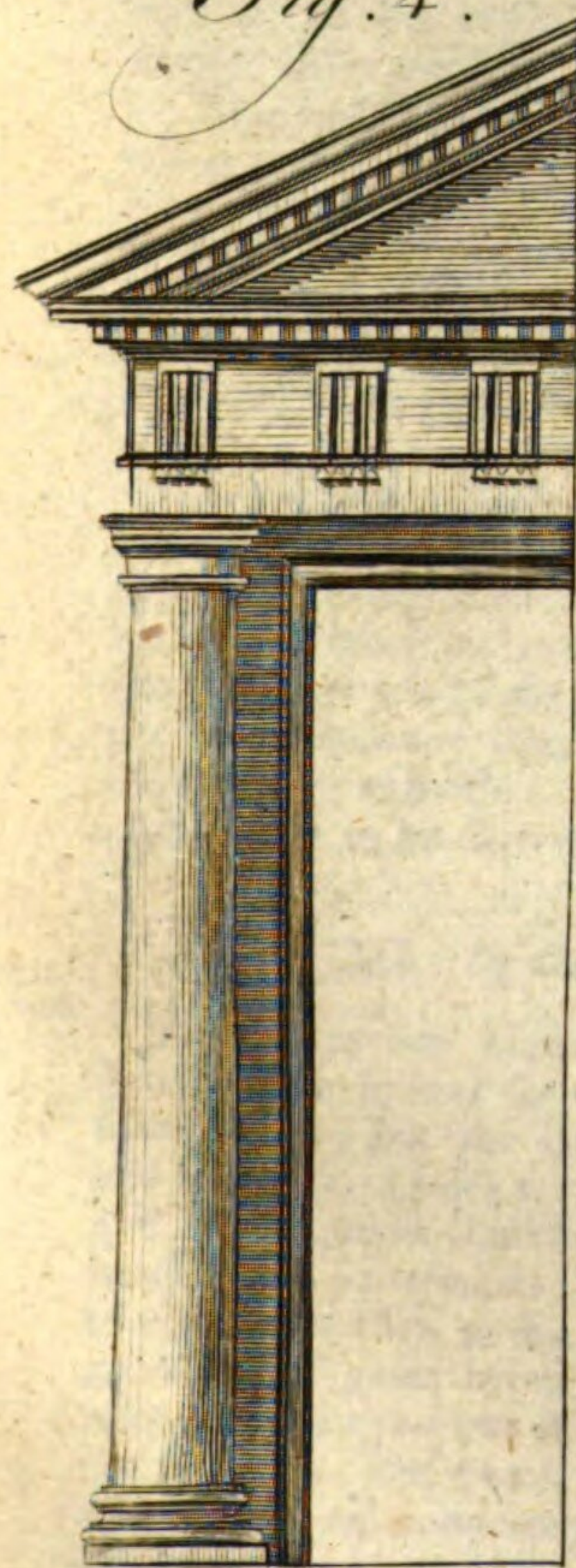


Fig. 5.

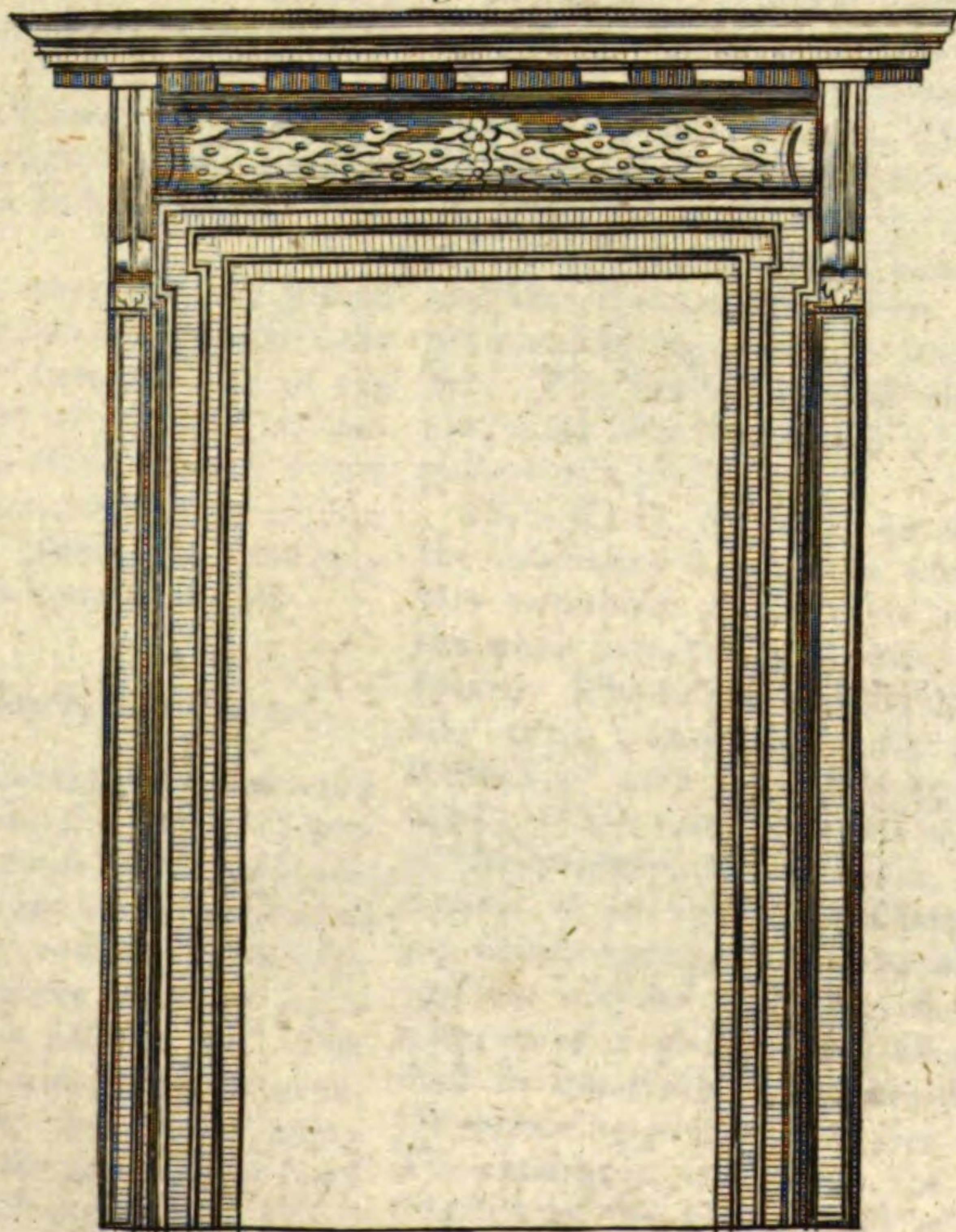
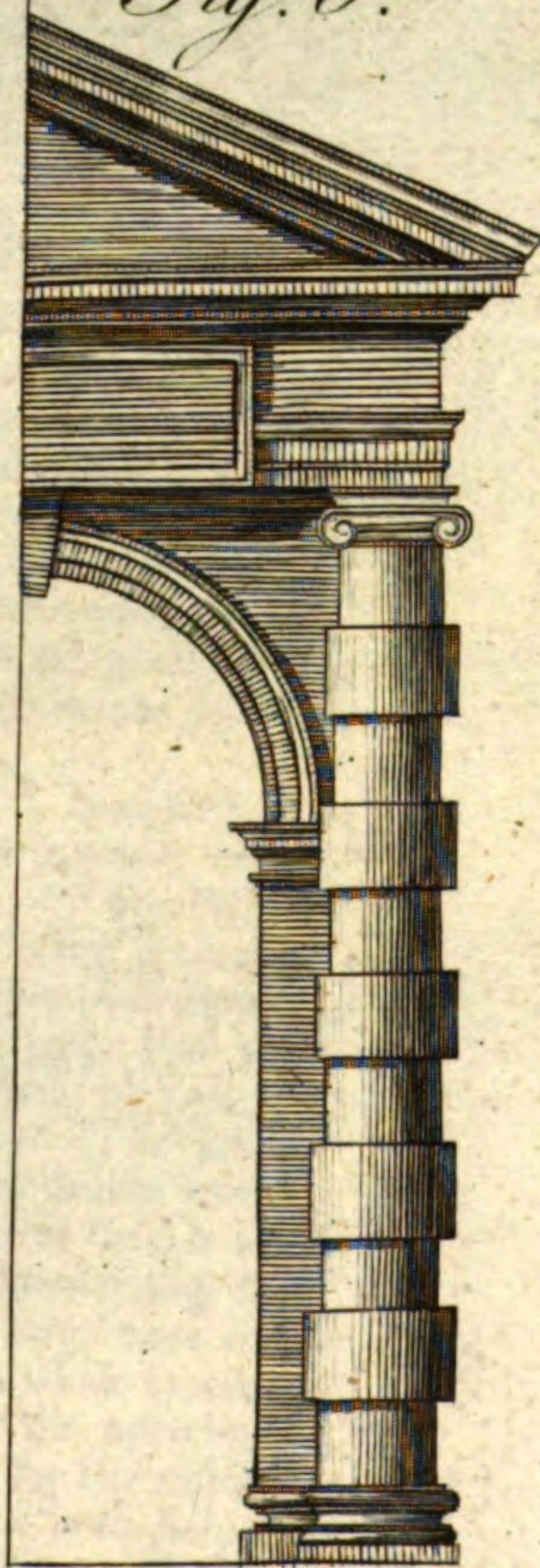


Fig. 6.



Principles. for the height is from one-fifth to one-fourth of the base, according to the extent of the pediment, and the character of the body it covers. The materials of the roof must also be attended to; for if it be covered with tiles, it will be necessary to raise it more than one quarter of the base, as was the custom of the ancients in their Tuscan temples.

The tympan is always on a line with the front of the frieze; and when large, admits of various ornaments.

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CHAP. XI. *Of Ballustrades.*

BALLUSTRADES are sometimes of real use in buildings; and at other times they are only ornamental. Such as are intended for use, as when they are employed in stair-cases, before windows, or to inclose terraces, &c. must always be nearly of the same height; never exceeding three feet and a half, nor ever less than three. But those that are principally designed for ornament, as when they finish a building, should be proportioned to the architecture they accompany: and their height ought never to exceed four-fifths of the height of the entablature on which they are placed; nor should it ever be less than two-thirds thereof, without counting the zocholo, or plinth, the height of which must be sufficient to leave the whole ballustrade exposed to view.

75
Proportion,
&c. of bal-
lusters.

The best proportion for ballustrades is to divide the whole given height into thirteen equal parts; eight of these for the height of the balluster, three for the base, and two for the cornice or rail; or into fourteen (if it be required to make the balluster less), giving eight parts to the balluster, four to the base, and two to the rail. One of these parts may be called a *module*; and being divided into nine minutes, may serve to determine the dimensions of the particular members.

In ballustrades, the distance between two ballusters should not exceed half the diameter of the balluster measured in its thickest part, nor be less than one third of it.

The breadth of the pedestals, when they are placed on columns or pilasters, is regulated by them; the dye never being made broader than the top of the shaft, nor much narrower; and when there are neither columns nor pilasters on the front, the dye should not be much lower than a square, and seldom higher. On stairs, or any other inclined planes, the same proportions are to be observed as on horizontal ones.

CHAP. XII. *Of Gates, Doors, and Piers.*

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Doors and
Gates.

THERE are two kinds of entrances, *viz.* doors and gates. The former serve only for the passage of persons on foot; but the latter likewise admit horsemen and carriages. Doors are used as entrances to churches and other public buildings, to common dwelling-houses, and apartments: And gates serve for inlets to cities, fortresses, parks, gardens, palaces, &c. The apertures of gates being always wide, they are generally made in the form of an arch, that figure being the strongest. But doors, which are generally of small dimensions, are commonly parallelograms, and closed horizontally.

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Principles. The general proportion for the apertures, both of gates and doors, whether arched or square, is, that the height be about double the breadth.

77
Piers.

The most common, and indeed almost the only ornaments for gates are the piers by which they are supported, and which were originally no more than bare posts into which the hinges of the gate were driven. Though this, however, is the only proper use of piers, it must be concealed as much as possible, and they must seem as if placed there only for ornament. As they are to be fixed to the wall before the house, so they must also be proportioned to it; and as they are to be seen in the same view with the front of the house, their correspondence with it is equally necessary. They are to be placed on a plinth, and something must be allowed by way of ornament and finishing at the top. All the luxuriance of fancy may be employed in the decoration of piers: but it will be proper to observe this general rule, that the pier being an inferior building, it must never be richer than the front of the house. If, for instance, the front of the house is ornamented with columns of the Doric order, the Ionic must not be used in the piers; and it will be found better to omit columns altogether, than to make use of the Tuscan order for piers in any case. If the Ionic or Corinthian orders are employed in the front of the house, the Doric or Ionic may be used with propriety in the piers. One piece of ornament is almost universal in piers, namely, a niche with its seat, made as if for the convenience of weary travellers. On this account, it will be proper to raise the columns on pedestals, because the continued moulding from their cap will be a good ornament under the niche. The base of the columns ought always to be the Attic.

Inside-doors, however small the building may be, should never be narrower than two feet nine inches; nor should they ever, in private houses, exceed three feet six inches in breadth, which is more than sufficient to admit the bulkiest person. Their height should at least be six feet three or four inches; otherwise a tall person cannot pass without stooping. In churches, palaces, &c. where there is a constant ingress and egress of people, the apertures must be larger. The smallest breadth that can be given to a gate is $8\frac{1}{2}$ or 9 feet, which is but just sufficient for the passage of a coach.

Plate XLII. fig. 1. Is a rustic door, composed by the celebrated Vignola, in which the aperture occupies two-thirds of the whole height, and one half of the whole breadth; the figure of it being a double square. The rustics may be either smooth or hatched; their joints must form a rectangle, and the breadth of each joint may be one third, or two sevenths, of the vertical surface of a rustic. The joints of the claveaux, or key-stones, must be drawn to the summit of an equilateral triangle, whose base is the top of the aperture. The architrave surrounding the aperture may be composed either of a large ogee and fillet, or of a platband and fillet. Its whole breadth must be one-tenth of the breadth of the aperture; the remaining part of each pier being for the rustics. The entablature is Tuscan: the cornice is to be one fifteenth of the whole height of the door; and what remains below it being divided into 21 equal parts, H h the

Principles. the two uppermost of them will be for the frize and architrave, and the remaining 19 for the rustics and plinth at the foot of the door.

Fig. 2. Is a disposition of Michael Angelo's. The windows of the Capitol at Rome are of this kind; and Sir Christopher Wren hath executed doors of the same kind under the semicircular porches in the flanks of St Paul's. The figure of the aperture may be a double square; the architrave one sixth of the breadth of the aperture; and the whole entablature one quarter of its height. The front of the pilasters or columns on each side, must be on a line with the fascia of the architrave; and their breadth must be a semidiameter.

Fig. 3. Is likewise a design of Vignola's. It is of the Corinthian order, and executed in the Cancellaria at Rome. The height is equal to double its breadth; and the whole ornament at the top is equal to one third of the height of the aperture. The architrave is in breadth one-fifth of the breadth of the aperture; and the pilasters that support the consoles are half as broad as the architrave. The whole is well imagined, but rather heavy; and it will be best to reduce the architrave to one-sixth of the aperture, diminishing the entablature proportionally.

Fig. 4. Is a design of Serlio's. The aperture may be either twice as high as broad, or a trifle less. The diameter of the columns may be equal to one quarter of the breadth of the aperture; and their height may be from eight diameters to eight and a half. The entablature must be somewhat less than one quarter of the height of the columns; and the height of the pediment may be one quarter of its base.

Fig. 5. Is a door in the salon of the Farnese at Rome, designed by Vignola. The aperture forms a double square. The entablature is equal to three elevenths of its height, the architrave being one of these elevenths; and the whole ornaments on the sides, consisting of the architrave and pilasters, is equal to two sevenths of the breadth of the aperture: the cornice is Composite, enriched with mutules and dentils; and the frize is adorned with a festoon of laurel.

Fig. 6. Is copied from a door at Florence, said to be a design of Cigoli's. The height of the aperture is a trifle more than twice its breadth. It is arched; and the impost is equal to half a diameter. The columns are Ionic, somewhat above nine diameters high; and their shafts are garnished each with five rustic cinctures. The entablature is less than one quarter of the column; and the breadth of the tablet, in which there is an inscription, is equal to the breadth of the aperture.

Plate LII. fig. 1. Is a pier invented by Mr Chambers. Its diameter may be one quarter of its height, exclusive of the plinth and vase; and the height of both these may be equal to one diameter of the pier, or a trifle less. The rustics may either be plain, hatched, or vermiculated: the height of each course may be one eleventh part of the height of the pier, counting to the top of the entablature; the entablature two elevenths; and the base of the pier one eleventh part.

Fig. 2. Is likewise a composition of Mr Chambers, imitated from M. Angelo Buonaroti's design for Car-

dinal Sermonetti. The height of the aperture is somewhat more than twice its breadth; which breadth occupies one third of the breadth of the whole composition. The order is Composite; and the height of the entablature is equal to one quarter of the height of the column. He has made a break in it over each column: but, unless the column project considerably, it will be as well to carry the entablature on in a straight line. The dimensions of the particular parts may be measured on the design.

Fig. 3. Is also a composition of Mr Chambers, executed at Goodwood, the seat of his grace the duke of Richmond, in Suffex. The diameter is one quarter of the height, exclusive of the finishing, which is equal to one diameter: and the height of the pier, from the top of the entablature downwards, being divided into eleven and a half parts, one of these parts is given to the base, one to each rustic, and one and a half to the astragal, frize, and cornice.

Fig. 4. Is a composition of the late earl of Burlington's, that great architect and patron of the fine arts, which is executed at Chiswick, and at Bedford-house in Bloomsbury-square, with some little difference.

Fig. 5. Is an invention of Mr Chambers.

Fig. 6. Is one of Inigo Jones's; of which kind he hath executed a couple at Ainsbury in Wiltshire, the seat of his grace the duke of Queensberry.

CHAP. XIII. *Of Windows.*

THE first consideration with regard to windows is ⁷⁸Proportions their size, which varies according to the climate, the ^{of windows.} destination of the building, &c. In Britain, the windows of the smallest private houses are commonly from 3 to 3½ feet broad; and being generally twice their breadth in height, or somewhat more, in the principal apartments, they generally rise to within a foot or two of the cielings of the rooms, which are frequently no higher than 10 feet, and at most 12 or 13. But, in more considerable houses, the apartments are from 15 to 20 feet high, and sometimes more; and in these the windows are from 4 to 5 and 5½ feet broad, and high in proportion. These dimensions are sufficient for dwelling-houses of any size in this country; when they are larger, they admit too much of the cold air in winter. But churches, and other buildings of that kind, may have larger windows, proportioned to the size of the structures.

The proportions of the apertures of windows depend upon their situation. Their breadth in all the stories must be the same; but the different heights of the apartments make it necessary to vary the height of the windows likewise. In the principal floor, it may be from 2⅓ of the breadth to 2½, according as the rooms have more or less elevation. In the ground-story, where the apartments are lower, the apertures of the windows seldom exceed a double square; and, when they are in a rustic basement, they are frequently made much lower. The height of the windows of the second floor may be from 1½ of their breadth to 1¾; and Attics and Mezzanines may be either a perfect square, or somewhat lower.

The windows of the principal floor are generally ⁷⁹How ornate most enriched. The simplest method of adorning them is, with an architrave surrounding the aperture, and

Fig. 1.

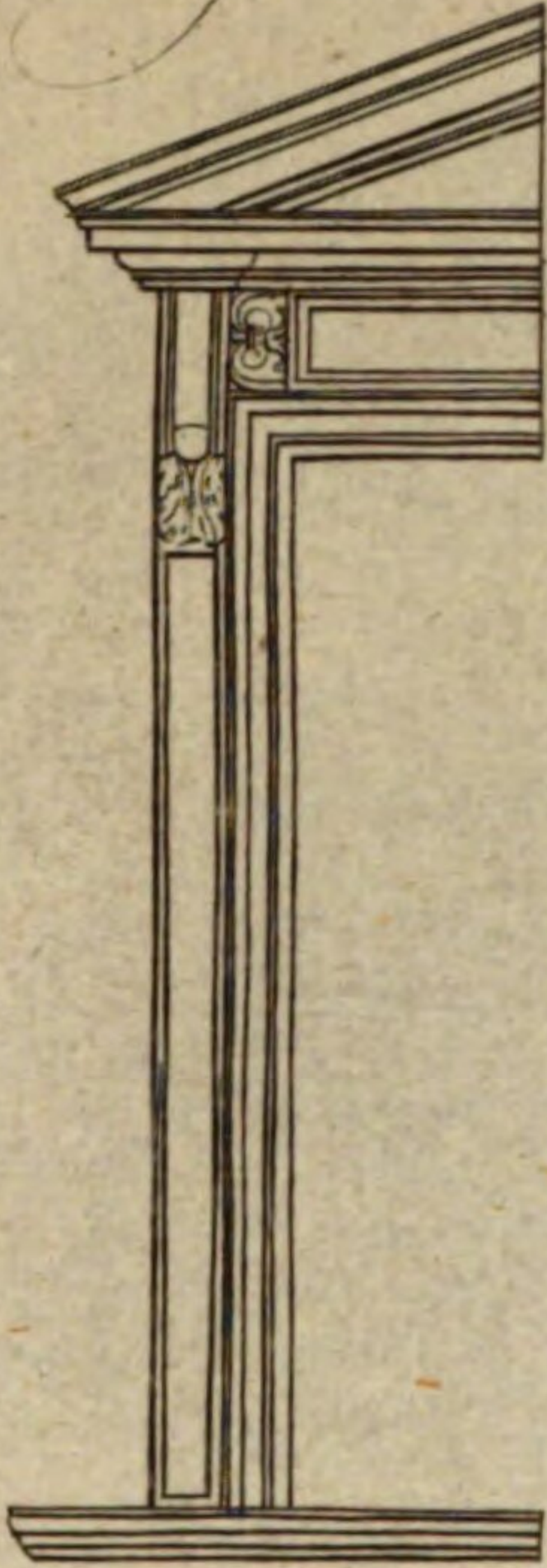


Fig. 2.

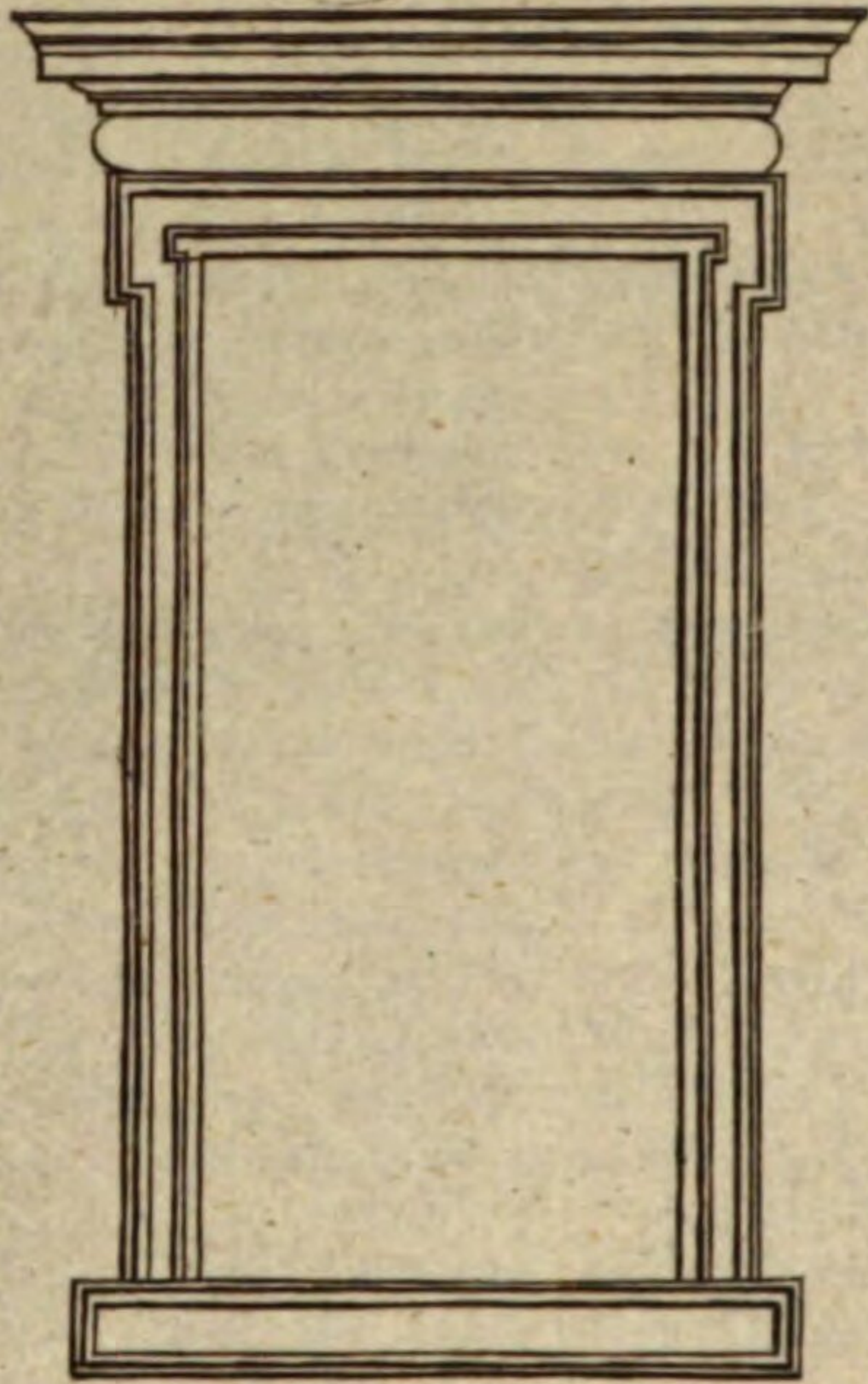


Fig. 3.

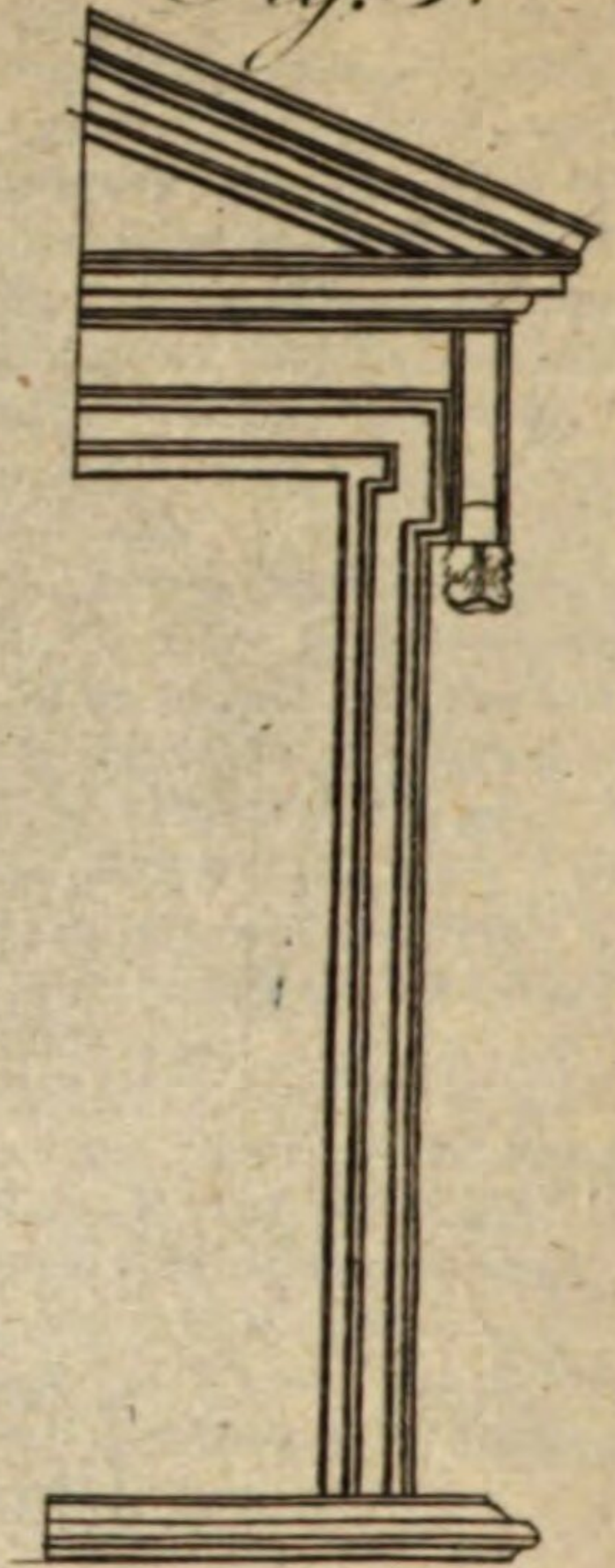


Fig. 4.

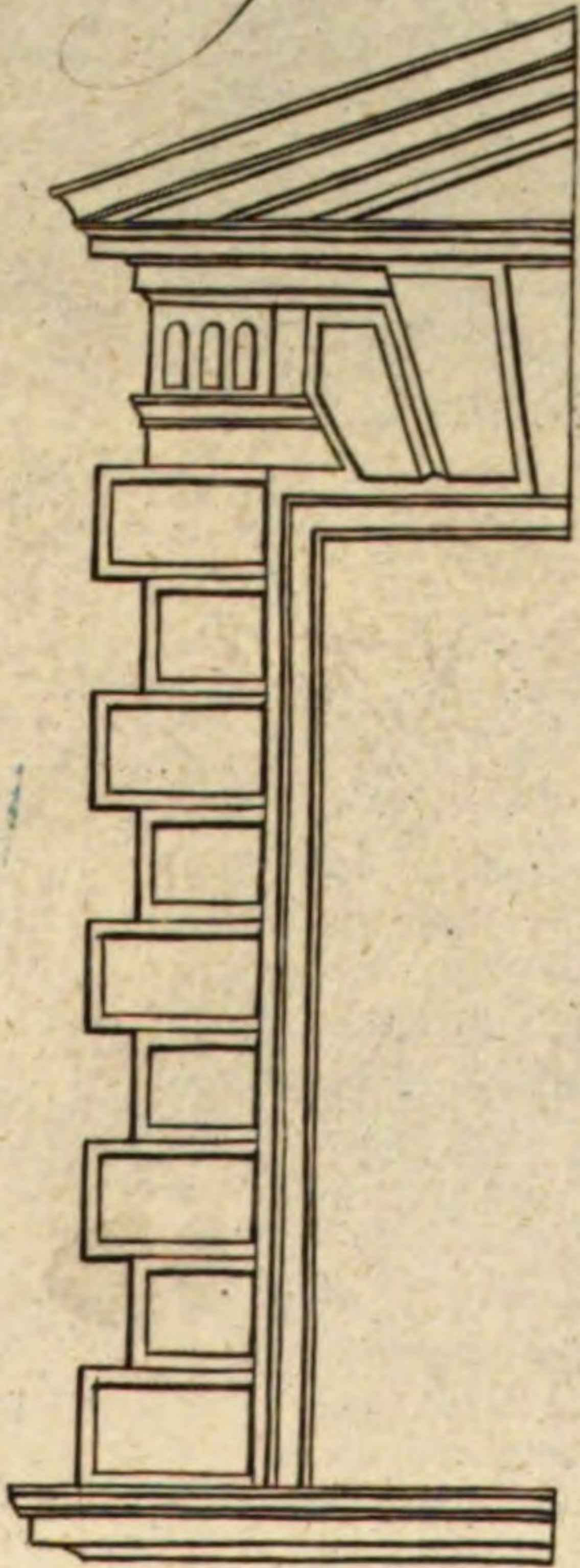


Fig. 5.

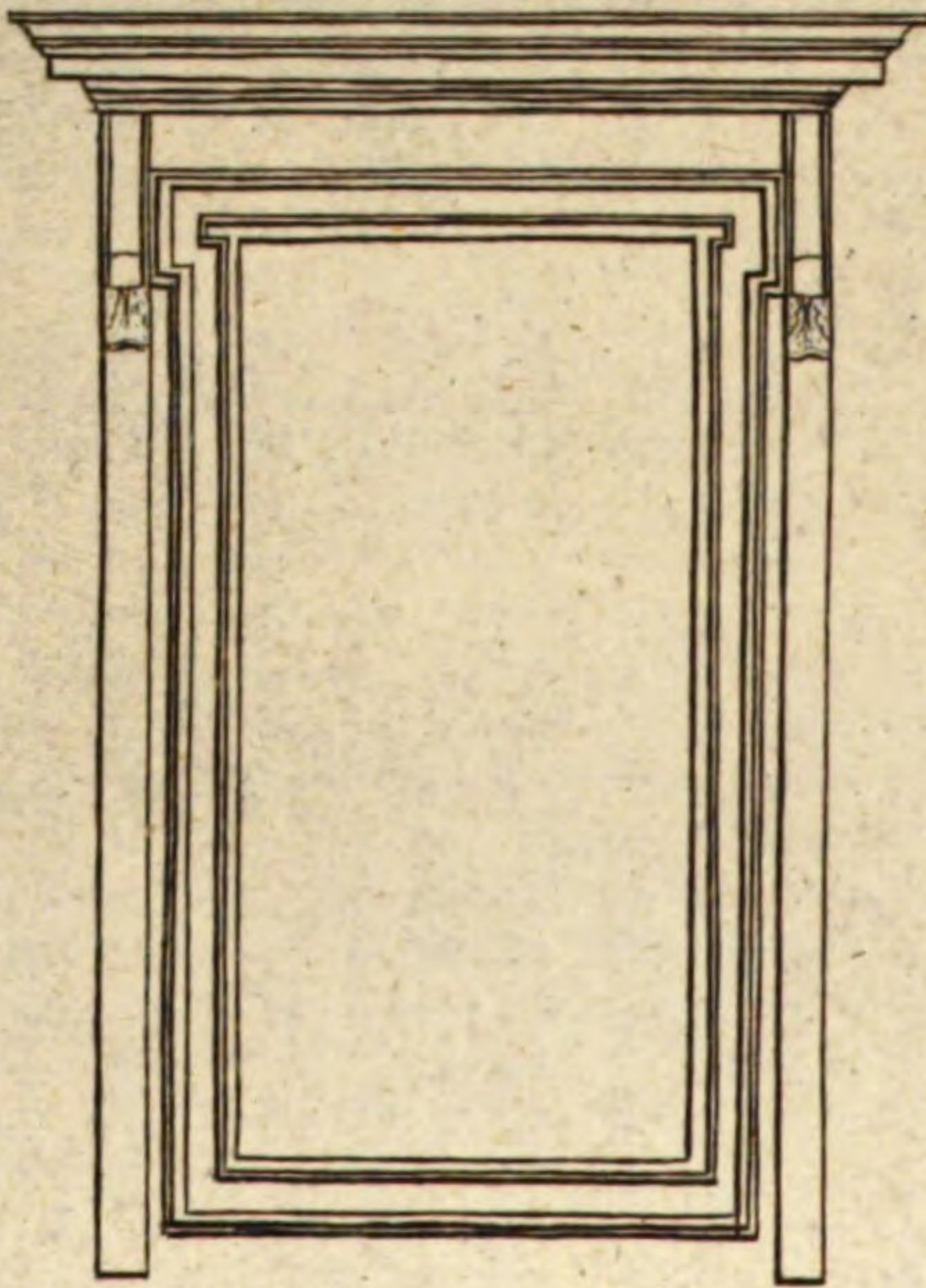
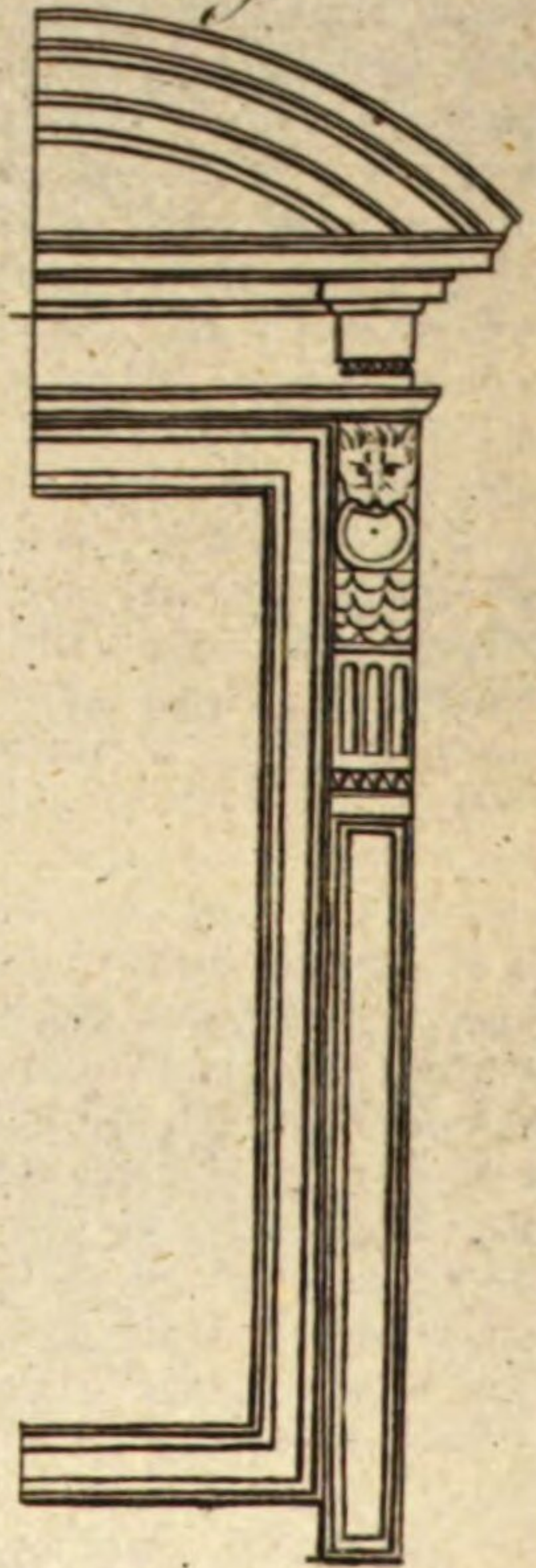


Fig. 6.



Principles. and crowned with a frize and cornice. The windows of the ground-floor are sometimes left entirely plain, without any ornament; and at others they are surrounded with rustics, or a regular architrave with a frize and cornice. Those of the second floor have generally an architrave carried entirely round the aperture; and the same is the method of adorning Attic and Mezzanine windows: but the two last have seldom either frize or cornice; whereas the second-floor windows are often crowned with both.

The breasts of all the windows on the same floor should be on the same level, and raised above the floor from two feet nine inches to three feet six inches at the very most. When the walls are thick, the breasts should be reduced under the apertures, for the convenience of looking out. In France, the windows are frequently carried quite down to the floor. When the building is surrounded with gardens, or other beautiful objects, this method renders the rooms exceeding pleasant.

The interval between the apertures of windows depends in a great measure on their enrichments. The breadth of the aperture is the least distance that can be between them; and twice that breadth should be the largest in dwelling houses; otherwise the rooms will not be sufficiently lighted. The windows in all the stories of the same aspect must be placed exactly above one another.

Plate XLIII. fig. 1. Is a design of P. Lescot, abbot of Clagne, executed in the old Louvre at Paris. The apertures may be a double square, or a trifle more; the architrave from one sixth to one seventh of the breadth of the aperture: the pilaster is equal to that breadth, when the architrave is narrow; or less by one quarter, or one fifth, when it is broad. The whole entablature should not exceed one quarter of the height of the aperture, nor be much lower. The consoles may be equal in length to half the breadth of the aperture at most, and to one third of it at least.

Fig. 2. Is a design of Palladio's, executed at the Chiericato in Vicenza: its proportions are not much different from the following. The plat-band that supports the window is equal to the breadth of the architrave.

Fig. 3. Is likewise a design of Palladio's, executed by him in many of his buildings. The aperture is a double square. The breadth of the architrave is one sixth of the breadth of the aperture; and the frize and cornice together are double the height of the architrave. The breadth of the consoles is two thirds of the breadth of the architrave.

Fig. 4. Is a design of Ludovico da Cigoli; and executed in the ground-floor of the Ranunchini palace at Florence.

Fig. 5. Is a design of Inigo Jones, executed at the Banqueting-house. The aperture may be a double square; the architrave may be one-sixth of its breadth; the whole entablature one quarter of its height; and the breadth of the consoles two thirds of the breadth of the architrave.

Fig. 6. Is a design of M. Angelo Buonorati, executed at the Farnese.

CHAP. XIV. Of Niches and Statues.

It hath been customary, in all ages, to enrich differ-

ent parts of buildings with representations of the human body. Thus the ancients adorned their temples, baths, theatres, &c. with statues of their deities, heroes, and legislators. The moderns still preserve the same custom, placing in their churches, palaces, &c. statues of illustrious persons, and even groups composed of various figures, representing occurrences collected from history, fables, &c. Sometimes these statues or groups are detached, raised on pedestals, and placed contiguous to the walls of a building, or in the middle of a room, court or public square. But they are most frequently placed in cavities made in the walls, called *niches*. Of these there are two sorts; the one formed like an arch in its elevation, and semicircular or semi-elliptical in its plan; the other is a parallelogram both in its plan and elevation.

The proportion of both these niches depends on the characters of the statues, or the general form of the groups placed in them. The lowest are at least a double square in height; and the highest never exceed $2\frac{1}{2}$ of their breadth.

With regard to the manner of decorating them, when they are alone in a composition, they are generally inclosed in a pannel, formed and proportioned like the aperture of a window, and adorned in the same manner. In this case the niche is carried quite down to the bottom; but on the sides and at the top, a small space is left between the niche and the architrave of the pannel. And when niches are intermixed with windows, they may be adorned in the same manner with the windows, provided the ornaments be of the same figure and dimensions with those of the windows.

The size of the statue depends on the dimensions of the niches. They should neither be so large as to have the appearance of being rammed into the niches as in Santa Maria Majora at Rome; nor so narrow as to seem lost in them, as in the Pantheon. The distance between the outline of the statue and side of the niche should never be less than one-third of a head, nor more than one half, whether the niche be square or arched; and when it is square, the distance from the top of the head to the ceiling of the niche should not be greater than the distance on the sides. Statues are generally raised on a plinth, the height of which may be from one third to one half of a head; and sometimes where the niches are large, the statues may be raised on small pedestals.

The character of the statue should always correspond with the character of the architecture with which it is surrounded. Thus, if the order be Doric, Hercules, Jupiter, Mars, Æsculapius, and all male statues, representing beings of a robust and grave nature, may be introduced; if Ionic, then Apollo, Bacchus, &c.; and if Corinthian, Venus, Flora, and others of a delicate nature should be employed.

CHAP. XV Of Chimney-pieces.

AMONG the ancients there are very few examples of chimney-pieces to be met with. Neither the Italians nor French have excelled in compositions of this kind. Britain, by being possessed of many able sculptors at different times, has surpassed all other nations, both in taste of design and workmanship.

H h 2

The

Principles.
85
Proportions and
situations.

The size of the chimney must be regulated by the dimensions of the room where it is placed. In the smallest apartments, the breadth of the aperture should never be less than three feet, or three feet six inches. In rooms from 20 to 24 feet square, or of equal superficial dimensions, it may be from 4 to $4\frac{1}{2}$ feet broad; in those of 24 to 27, from $4\frac{1}{2}$ to 5; and in such as exceed these dimensions, the aperture may even be extended to $5\frac{1}{2}$ or 6 feet.

The chimney should always be situated so as to be immediately seen by those who enter the room. The middle of the partition-wall is the most proper place in halls, salons, and other rooms of passage; but in drawing-rooms, dressing-rooms, and the like, the middle of the back-wall is the best situation. In bed-rooms, the chimney is always in the middle of one of the partition-walls: and in closets and other very small places, to save room, it is put in a corner. Wherever two chimneys are used in the same room, they should be placed either directly facing each other, if in different walls, or at equal distances from the centre of the wall in which they both are.

The proportion of the apertures of chimney-pieces of a moderate size is generally a perfect square; in small ones it is a trifle higher; and in large ones, a trifle lower. Their ornaments consist in architraves, friezes, cornices, columns, pilasters, termini, caryatides, consoles, and all kinds of ornaments of sculpture, representing animals and vegetables, &c. likewise vases, chalices, trophies of arms, &c. In designing them regard must be had to the nature of the place where they are to be employed. Such as are intended for halls, salons, guard-rooms, galleries, and other large places, must be composed of large parts, few in number, of distinct and simple forms, and having a bold relief; but chimney-pieces for drawing-rooms, dressing-rooms, &c. may be of a more delicate and complicated nature.

Chimney-pieces are composed of wood, stone, or marble; the last of which ought to be preferred, as figures or profiles are best represented in a pure white.

Plate XLIV. Exhibits different designs for chimney-pieces by Palladio and Inigo Jones. Their proportion may be gathered from the designs, which are accurately executed.

86

CHAP. XVI. *Of the Proportions of Rooms.*

THE proportions of rooms depend in a great measure on their use, and actual dimensions: but, with regard to beauty, all figures, from a square to a sesquilateral, may be employed for the plan.

The height of rooms depends on their figure. Flat cieled ones may be lower than those that are coved. If their plan be a square, their height should not exceed five-sixths of the side, nor be less than four-fifths; and when it is oblong, their height may be equal to their breadth. But coved rooms, if square, must be as high as broad: and when oblong, they may have their height equal to their breadth, more one fifth, one quarter, or even one third of the difference between the length and breadth: and galleries should at least be in height one and one third of their breadth, and at most one and a half, or one and three fifths.

The coldness of the British climate is a strong objection to high rooms; so that it is not uncommon to see the most magnificent apartments not above 15, 16, or at most 18 feet high; though the extent of the rooms would require a much more considerable elevation. But where beauty is aimed at, this practice ought not to be imitated.

When rooms are adorned with an entire order, the entablature should never exceed one-sixth of the whole height in flat-cieled rooms, and one-sixth of the upright part in coved ones; and when there are neither columns nor pilasters, but only an entablature, its height should not be above one-seventh of these heights. If the rooms be finished with a simple cornice, it should never exceed one-fourteenth, nor ever be less than one-fifteenth part of the above mentioned height.

CHAP. XVII. *Of Cielings.*

CIELINGS are either flat, or coved in different manners. The simplest of the flat kind are those adorned with large compartments, surrounded with one or several mouldings, either let into the cieeling, or projecting beyond its surface: and when the mouldings that form the compartments are enriched, and some of the compartments adorned with well executed ornaments, such cielings have a good effect, and are very proper for common dwelling-houses, and all low apartments. Their ornaments and mouldings do not require a bold relief; but, being near the eye, they must be finished with taste and neatness. For higher rooms, a flat cieeling which has the appearance of being composed of various joists framed into each other, and forming compartments of various geometrical figures, should be employed. The sides of the joists forming the compartments are generally adorned with mouldings, and represent either a simple architrave, or an architrave-cornice, according to the size of the compartments and the height of the room.

Coved cielings are more expensive; but they are likewise more beautiful. They are used promiscuously in large and small rooms, and occupy from one-fifth to one-third of the height of the room. If the room be low in proportion to its breadth, the cove must likewise be low; and when it is high, the cove must be so likewise: by which means the excess of the height will be rendered less perceptible. But, where the architect is at liberty to proportion the height of the room to its superficial dimensions, the most eligible proportion for the cove is one fourth of the whole height. In parallelogram figured rooms, the middle of the cieeling is generally formed into a large flat pannel. This pannel, with the border that surrounds it, may occupy from one half to three fifths of the breadth of the room. The figure of the cove is commonly either a quadrant of a circle or of an ellipse, taking its rise a little above the cornice, and finishing at the border round the great pannel in the centre. The border projects somewhat beyond the coves on the outside; and, on the side towards the pannel, it is generally made of sufficient depth to admit the ornaments of an architrave, or architrave and cornice.

In Britain circular rooms are not much in use; but they

Principles.
87
High rooms
improper
in Britain.

88

Fig. 1.

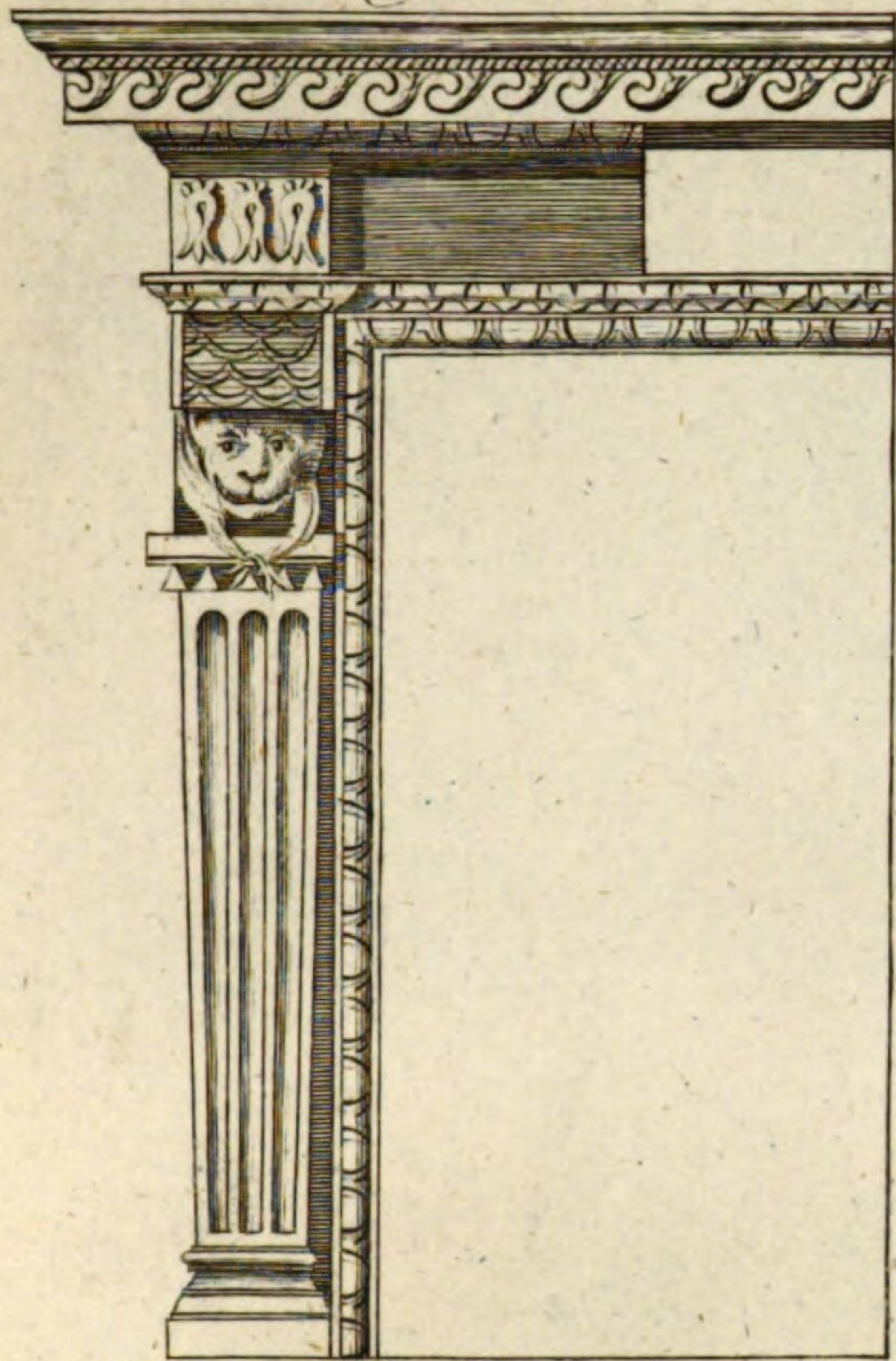


Fig. 2.

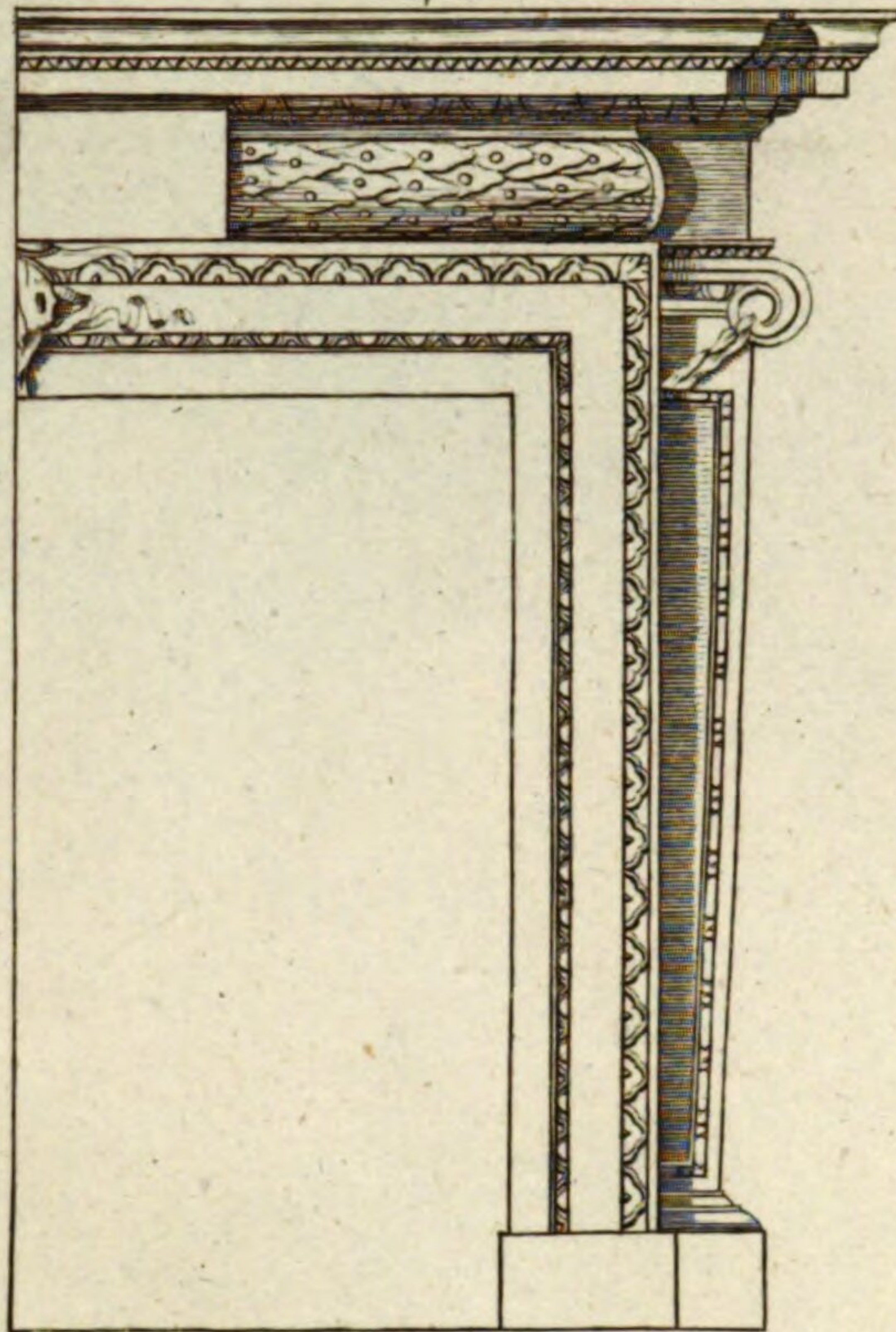


Fig. 3.

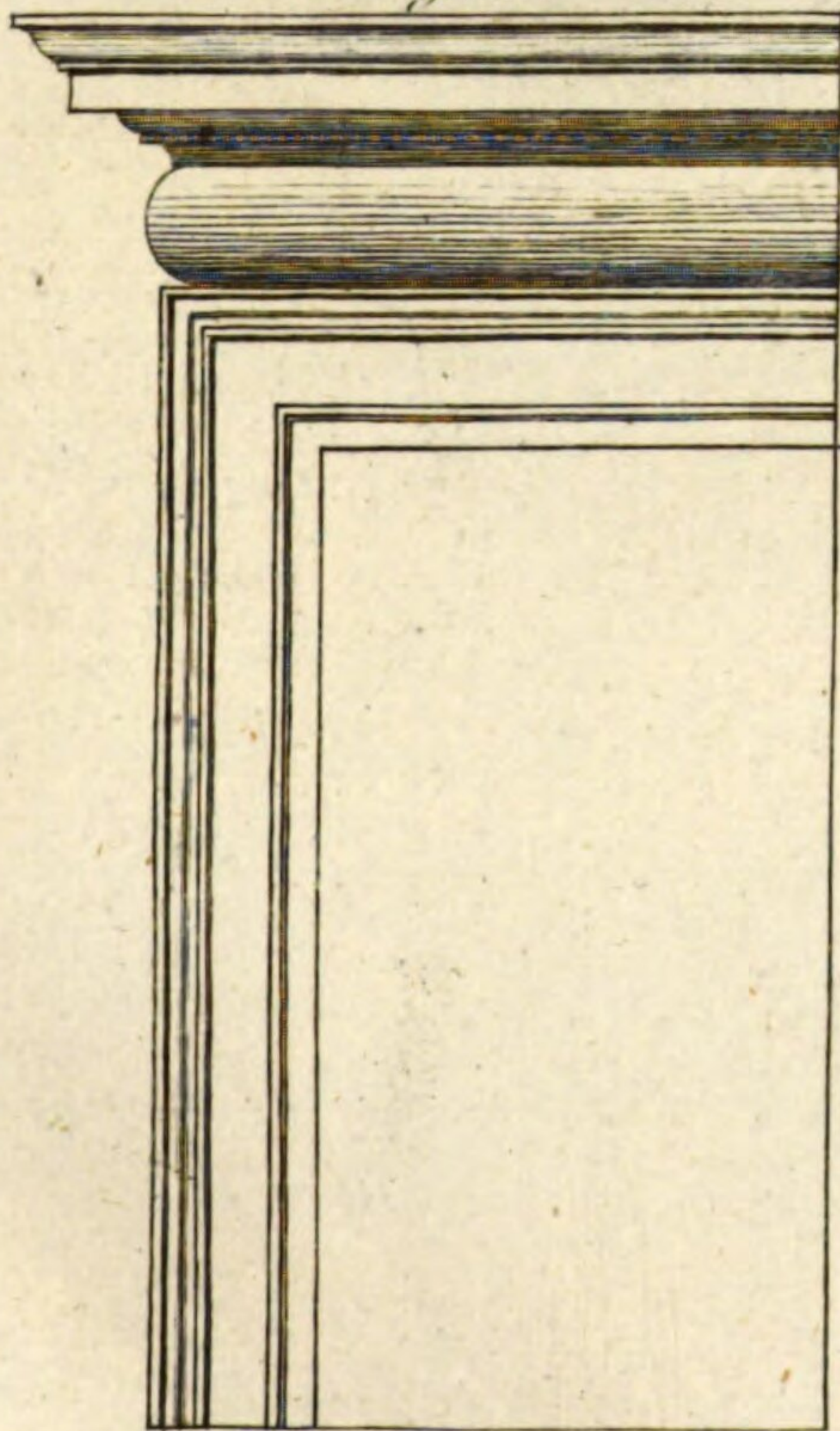
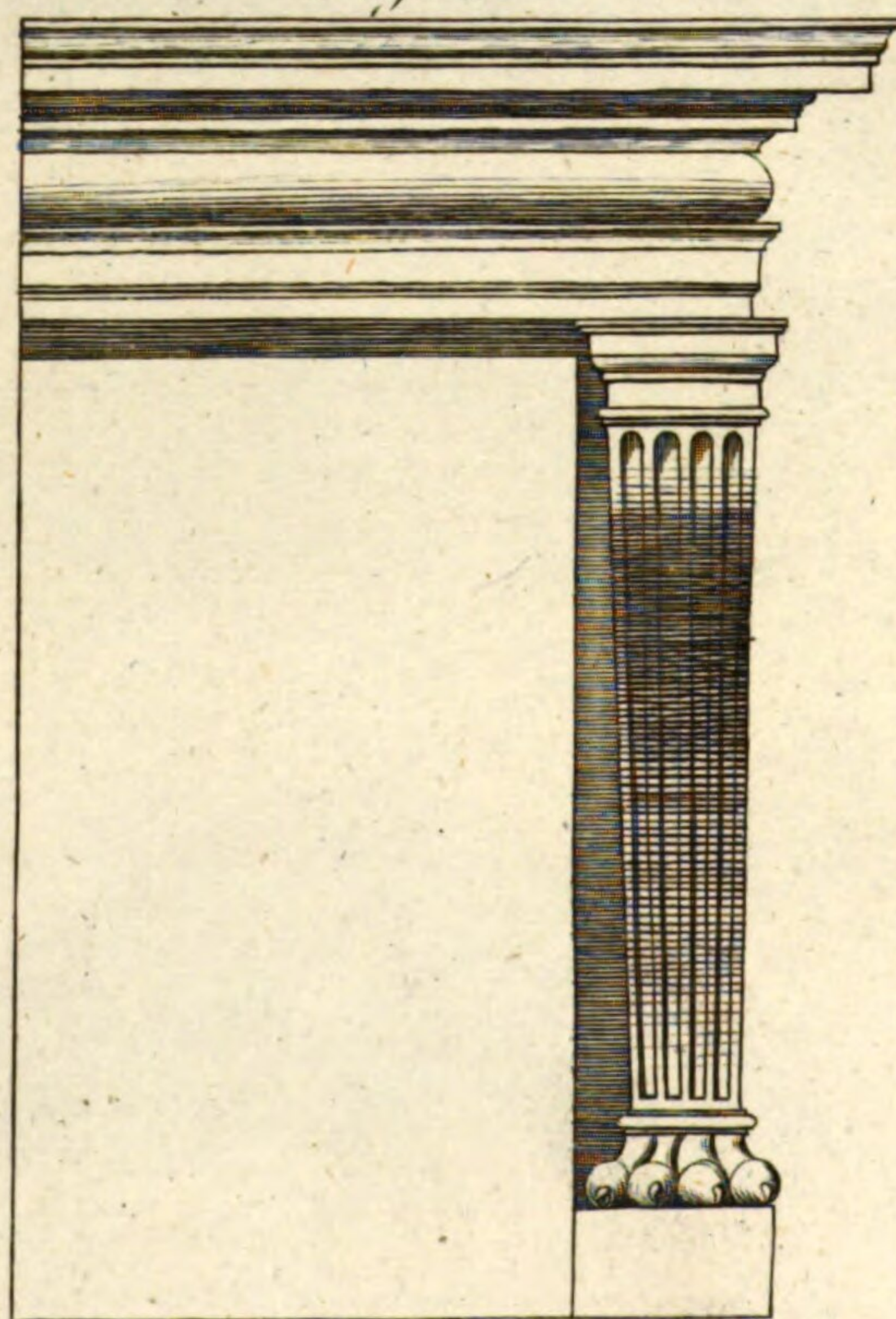
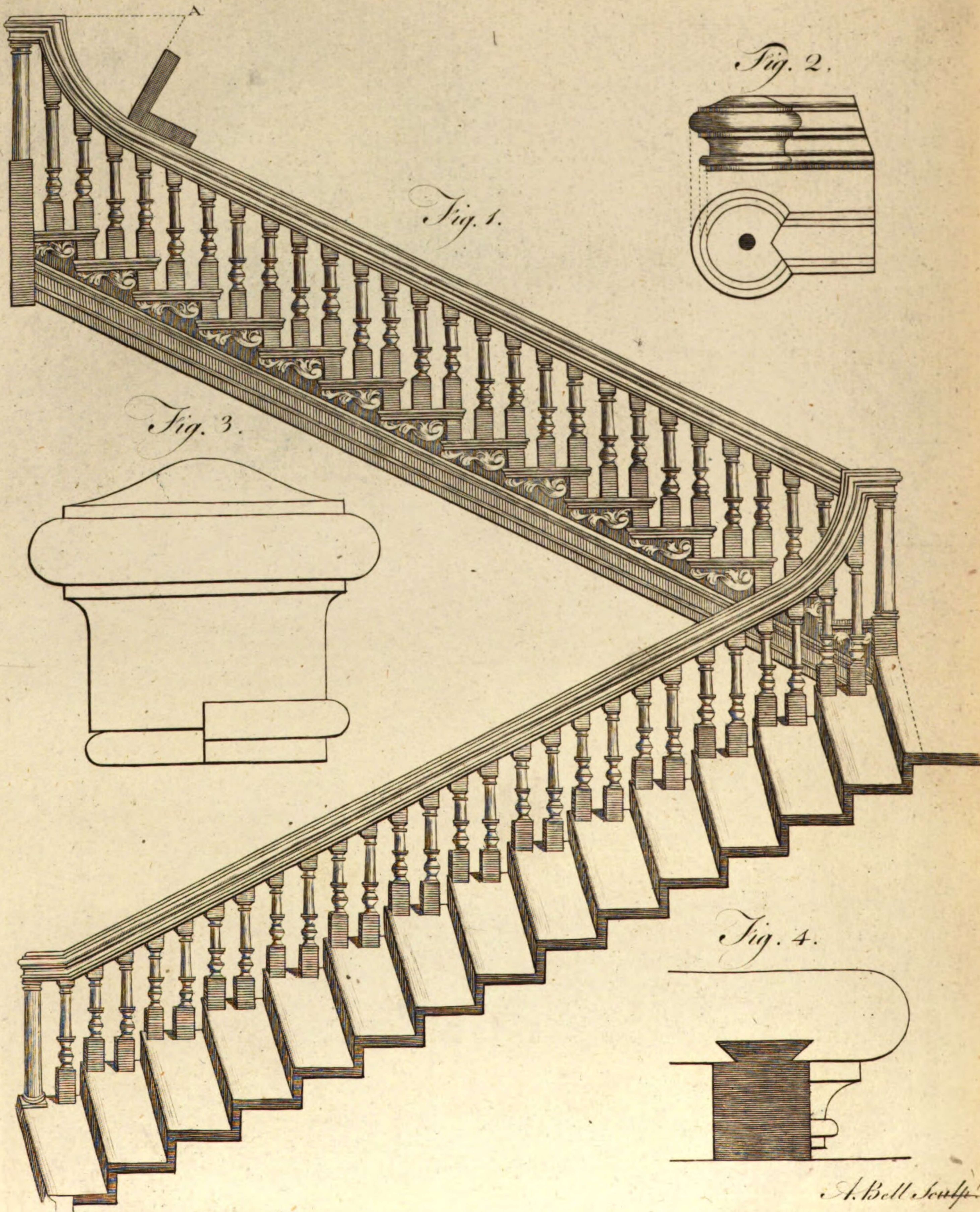


Fig. 4.





Principles. they are very beautiful. Their height must be the same with that of square rooms; their cielings may be flat; but they are handsomer when coved, or of a concave form.

Arce doublaux, or soffits of arches, when narrow, are ornamented with *guillochs*, or frets; but when broad, they may be adorned in a different manner.

When the profiles of the room are gilt, the cielings ought likewise to be gilt. The usual method is to gild all the ornaments, and to leave the grounds white, pearl colour, light blue, or of any other tint proper to set off the gilding to advantage. Painted cielings, so common in France and Italy, are but little used in Britain.

39 CHAP. XVIII. Of Stairs and Stair-cases.

THERE are many kinds of stair-cases: for, in some, the steps are made straight; in others, winding; in others, mixed of both. Of straight stairs, some fly directly forward, others are square, others triangular. Others are called *French flights*, or *winding-stairs*, (which in general are called *spiral*, or *cockle-stairs*); of which some are square, some circular or round, and some elliptical or oval; and these again are various, some winding about a solid, others about an open newel. Stairs mixed of straight and winding steps are also of various kinds; some are called *dog-legged*; some there are that wind about a solid newel, and others that fly about a square open newel.

90 Stair-cases where to be placed. Great care ought to be taken in placing of the stair-case in any building; and therefore stair-cases ought to be described and accounted for justly when the plan of a building is made. For want of this, sometimes unpardonable errors have been committed: such as having a little blind stair-case to a large house, or, on the other hand, a large spacious stair-case to a little one.

Palladio says, in placing stair-cases, the utmost care ought to be taken; it being difficult to find a place convenient for them, that will not at the same time prejudice the rest of the building. But commonly the stairs are placed in the angle, wing, or middle of the front.

To every stair-case are required three openings.

First, the door leading thereto.

Secondly, the window or windows that give light to it.

And, thirdly, the landing.

First, the door leading to the stair-case should be so placed, that most of the building may be seen before you come at the stairs, and in such a manner that it may be easy for any person to find out.

Secondly, for the windows; if there be but one, it must be placed in the middle of the stair-case, that thereby the whole may be enlightened.

Thirdly, the landing of stairs should be large and spacious for the convenient entering into rooms: in a word, stair-cases should be spacious, light, and easy in ascent. The height of large steps must never be less than six inches, nor more than seven inches and a half.

The breadth of steps should never be less than 10 inches, nor more than 18 inches; and the length of them not less than three feet, nor more than 12.

Principles. Plate XLV. fig. 1. A stair-case of two flights.— *A* shows the manner of drawing the *ramp*, which is to rise equal to the height of the first step of the next flight, and as much as its *kneeling*; as is shown by the *ramp* intersecting the rail of the second flight.

Fig. 2. Shows the straight rail intersecting a circular cap.

Fig. 3. Section of two different hand-rails.

Fig. 4. Shows the manner of dove-tailing the riser into the step.

Plate XLVI. fig. 1. Represents a stair-case, with flights, and its landing-rail.

Fig. 2. Shows the solid part of the step out of which the scroll is formed; where *a* represents the *oversail* of the step; *b*, The thickness of the bracket, with its *mitring* to the *riser*; and, *c*, The *string-board*.

Fig. 4. Shows the scale for drawing the scroll of fig. 3.—To perform which, take the distance from 1 to the centre, in fig. 3. and set it from 1 to the centre in fig. 4.; divide that extent into three parts, then set 4 such parts on the upper side of the scale, and draw the line from 4 to 1; set one foot of your compasses at 4, and strike the circular line; let that be divided into 12 equal parts, and then draw lines from 4 thro' those divisions to the upright line.

The scale being thus made, draw the scroll of fig. 3. by it in the following manner.

Set one foot of your compasses in 1, and describe a stroke at *c*; take the same distance, and with one foot in 2, cross the stroke at *c*; then from *c* turn the part from 1 to 2, and proceed in the same manner; for if the distance were taken in the scale from 1 to the centre, it would strike the circle too flat; and if taken from 2, it would strike the circle too quick.

When this is well understood, there will be little difficulty in drawing the scroll below fig. 2.; which throws itself out farther in proportion than that in fig. 3.; for this will always be the case when the upper line of the scale, which consists of four divisions in fig. 4. is made but with three divisions or less; whence it appears, that the upper line of the scale may be drawn at what length you please, according as you would bring in or keep out the scroll.

Plate XLVII. Shows the manner of squaring twist-rails.

Fig. 2. Exhibits the pitch-board, to show what part of the step the twisted part of the rail contains; the three dotted lines drawn from the rail to the pitch-board represent the width of the rail, which is to be kept level. The dotted lines *a* and *b* show how much half the width of the rail turns up from its first beginning to 3.

Fig. 3. Shows the same pitch-board with the manner of the rail's turning up. If the sides of the twisted part of the rail be shaped by the rail-mould, so that they direct down to its ground plan, that is, the upper side of the rail being first struck by the mould, then apply the mould to the under side, as much back as the level of the pitch-board shows, by being struck on the side of the rail, and then fig. 3. being applied to the outside of the rail, from its first twisting part to 3, will show how much wood is to be taken off.

Fig. 5.

Practice.

Fig. 5. Exhibits the square of the rail, with the raking line of the pitch-board drawn through the middle on the upper side; then draw the depth of the side of the rail parallel to this, and the dotted lines from the diagonal of the rail, these lines show what quantity of wood will be wanting on the upper and lower sides of the rail. Set your compasses at c , and draw the circular stroke from the raking part of the pitch-board to b ; take the distance ab , and transfer it from a to b in fig. 7. The several distances thus found may be set at any number of places, ranging with the straight part of the rail; and it then forms the width of the mould for the twisting part of the rail.

Fig. 7. Shows the sweep of the rail. The rail cannot be fixed less than one fourth part from the *nosing* or front of the step.

The remaining part of the pitch-board may be divided into any number of parts, as here into four; from these divisions draw lines across the pitch-board to the ranking line; then take the distances from the ground line of the pitch-board to the plan of the rail; and set them perpendicular from the ranking line of the pitch-board; and these divisions, when the rail is in its proper position, lie directly over the divisions on the ground plan.

In this figure, l , m , and n , rise as much above o as the dotted line in fig. 5. does above the width of the rail; and they sink as much below o as the other dotted line in fig. 5. falls below the width of the rail; the same thickness must be glued upon o , though the greatest part will come off in squaring. The reason of placing the letters l , m , and n , where they are, is, that they might not obstruct the small divisions of the rail-mould.

Fig. 4. Shows how to find the rail when it takes more than one step. The remaining part of the pitch-board is divided into four parts, as before in fig. 7. and it takes in two such parts of the next step. Draw lines from these divisions to the diagonal of the pitch-board, as in fig. 7. then take the distance ab , and set it from c to d , and so proceed with the other divisions.

Another way to find the outside of the rail-mould is, to draw all the divisions across the plan of the rail; then take the distance from the ground-line of the pitch-board to 4 , transfer it from the diagonal of the pitch-board to 4 on the rail; and so proceed with

the other distances. Now, when the rail is put in its proper situation, c will be perpendicular to b , and all the divisions, as 1, 2, 3, 4, &c. in the rail, will be perpendicular to 1, 2, 3, 4, &c. in the ground-plan.

Fig. 6. Shows the plan of a rail of five steps.

To find the rail.—Set five divisions, as from e to b , which is the height of the five steps; draw the diagonal b to the plan of the rail; then take the distance ef , and transfer it to gb , and proceed in the same manner with the other seven distances.

To find the width of the rail-mould.—Draw the lines across the plan of the rail, as at k ; set that distance from the diagonal to i ; and so proceed with the rest, as shown in fig. 4.

Having formed the sides of the rail perpendicular to its ground-plan, and having squared the lower end of the rail, then take a thin lath, and bend it with the rail, as is represented by m , fig. 1.

This is the readiest method of squaring a solid rail; but if the rail be bent in the thicknesses, the nosing of the steps must be drawn upon a cylinder, or some other solid body of a sufficient width to contain the width of the rail or string-board.

r Represents the depth of the rail, touching the nose of each step. Take a sufficient number of thicknesses of this width to make the thickness of your rail, glue them altogether upon your cylinder or templet, confine them till they are dry, and the rail taken off is ready squared. Proceed in the same manner with the architrave marked a .

CHAP. XIX. Of Roofs.

94

PLATE XLVIII. fig. 1. Shows the form of a trussed roof, with three ring-posts, that may carry seventy feet or upwards.

Fig. 2. Exhibits an *M* roof, capable of carrying as great an extent as the former. Indeed both these designs are capable of carrying almost any extent.

Fig. 3. Represents two different sorts of trusses.

Fig. 4. Shows the manner of piecing timber. Sometimes the joint may be extended as far as a , with another bolt through it. To the right is shown a different sort of joint.

Fig. 5. Shows the manner of trussing a girder. If the trusses are full long, with the pieces b and c , you may make them as light as you please.

Fig. 6. Represents the manner of trussing partitions.

PART II. PRACTICE OF ARCHITECTURE.

HAVING thus described and given rules for the most generally received proportions of the different parts of buildings, both of the useful and ornamental kind, we must next give an account of the method of erecting different kinds of edifices; and here the judgment of the architect must necessarily be very much employed, as no fixed rules have been laid down by which he can be directed in all cases. As a necessary preliminary, however, to the construction, we must first consider,

93

CHAP. I. The Situations of Houses.

THOUGH it must be, in many cases, impossible to choose such a situation as might be agreeable either to the architect or the proprietor, yet where a choice can

be made, there are certainly a great many circumstances that will determine one situation to be preferable to another. These circumstances depend entirely on the person who is to inhabit the house. A farmer, for instance, ought to dwell in the most central part of his farm; an independent gentleman must regard the healthiness, the neighbours with whom he can converse, the prospect from his house, and also the aspect of the ground near it. To answer these purposes of health and pleasure, an open elevated situation is the best, as the air is there pure and the prospect extensive; but too elevated a situation is disagreeable, as being both difficult of access and exposed to cold and bleak winds. To build in bottoms between hills is both unhealthy and unpleasant; the house being in a manner buried,

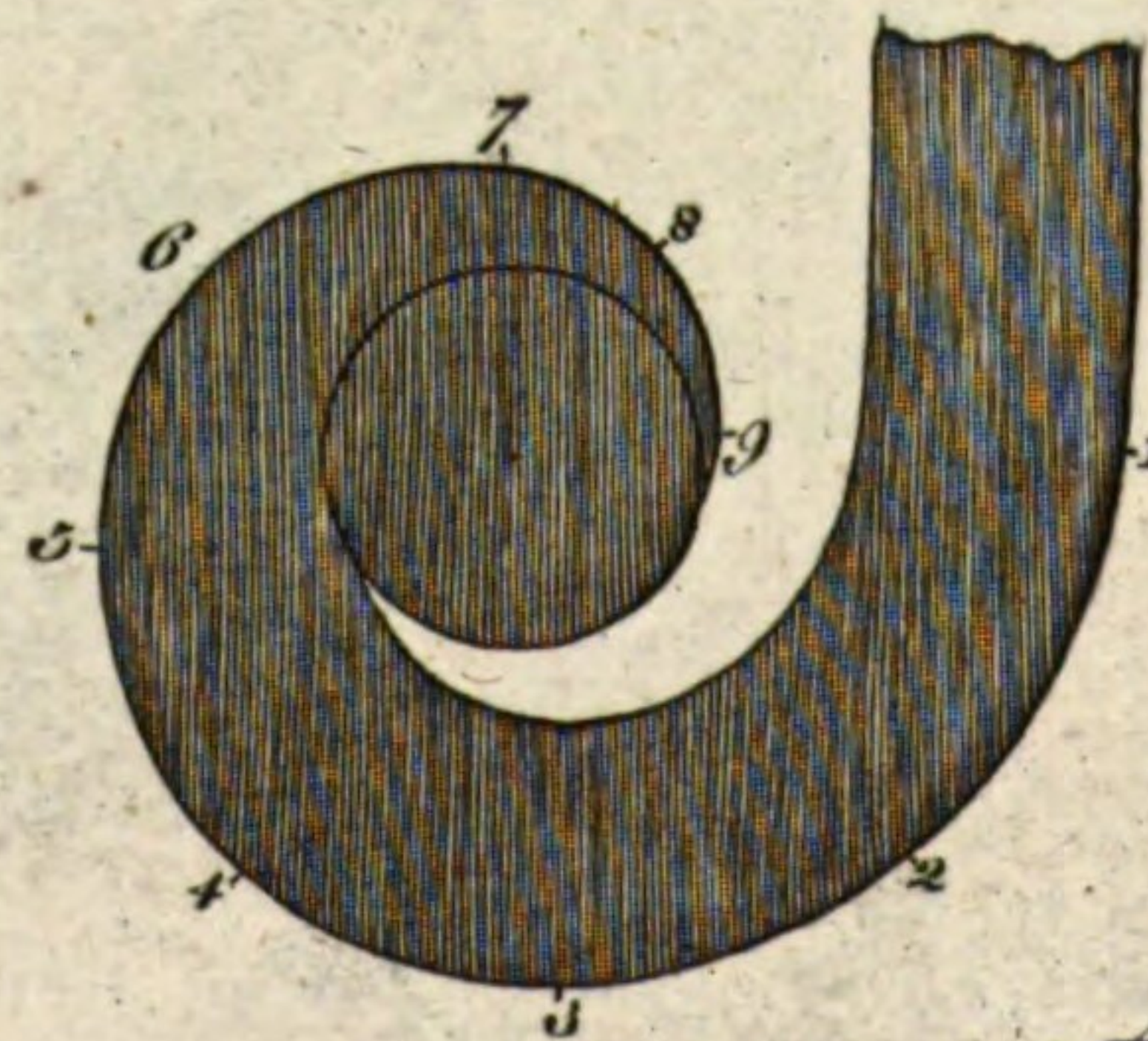
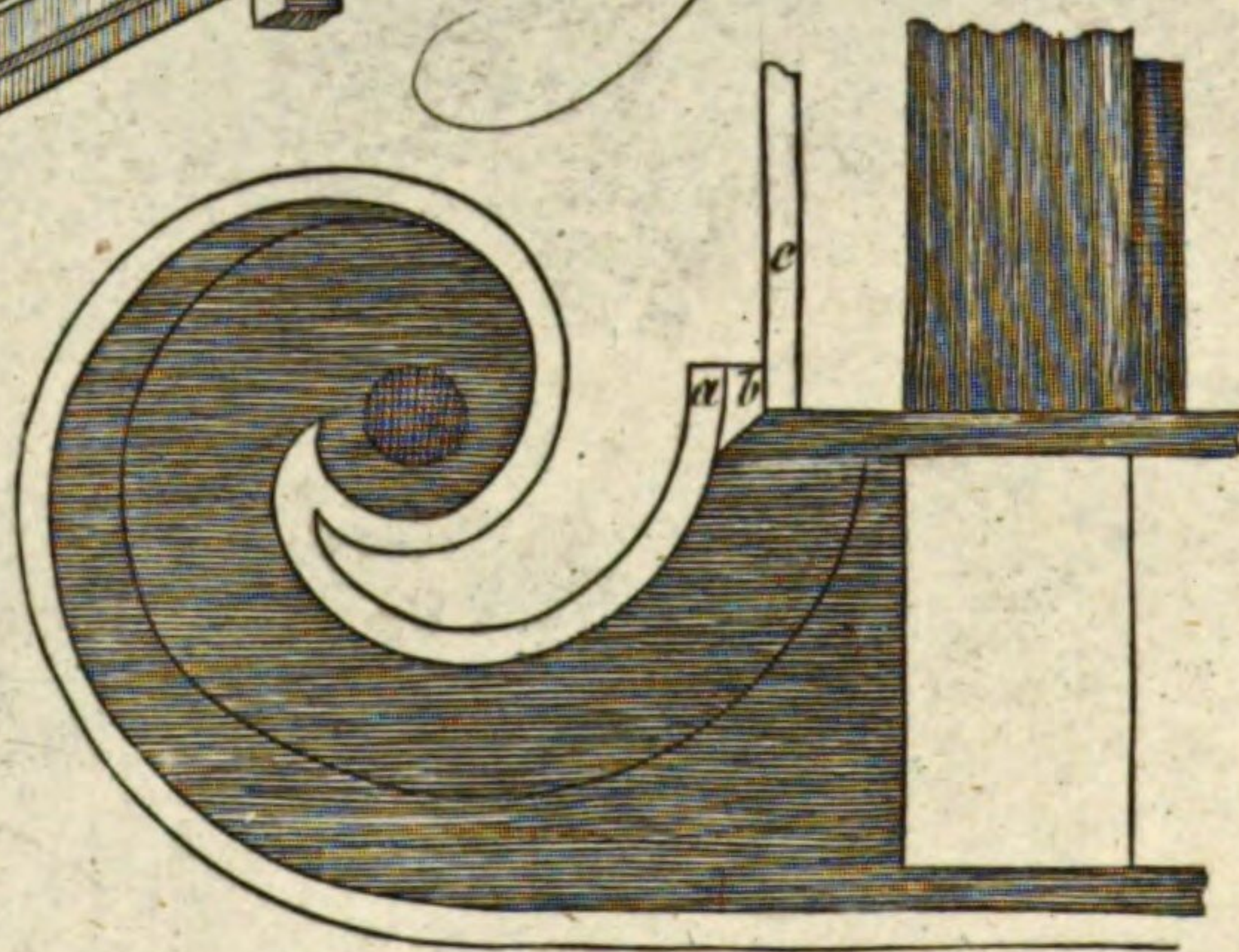
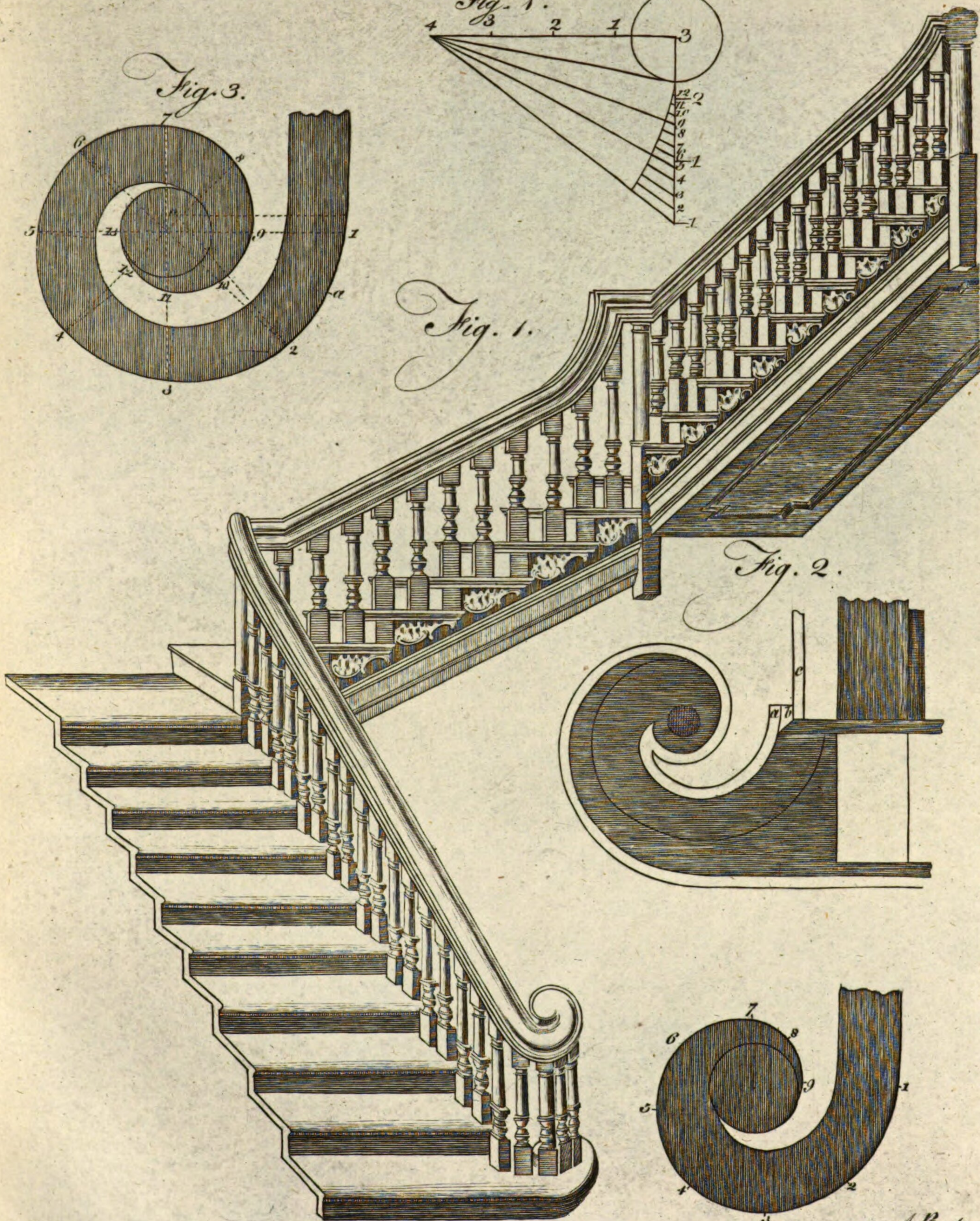
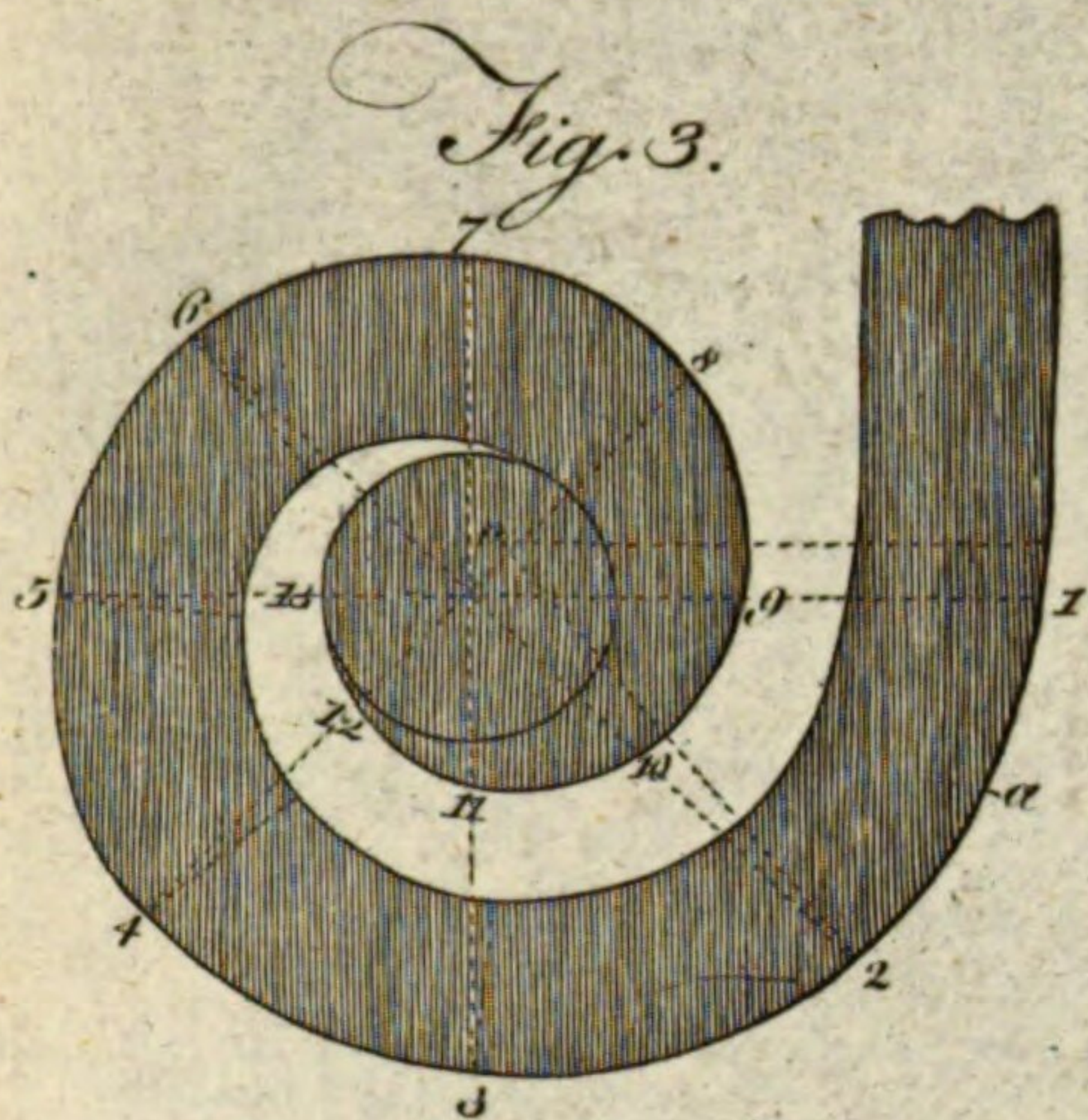
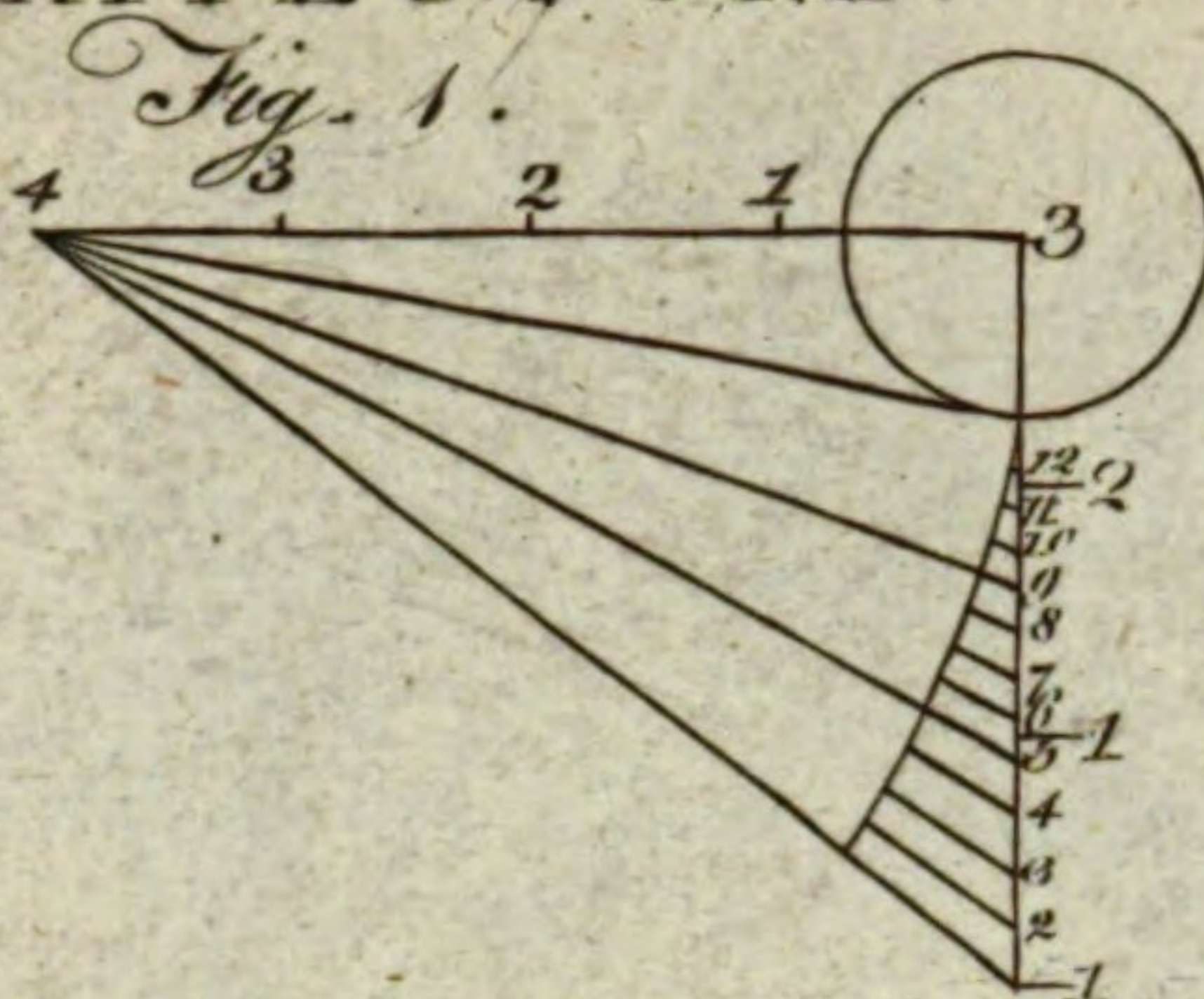


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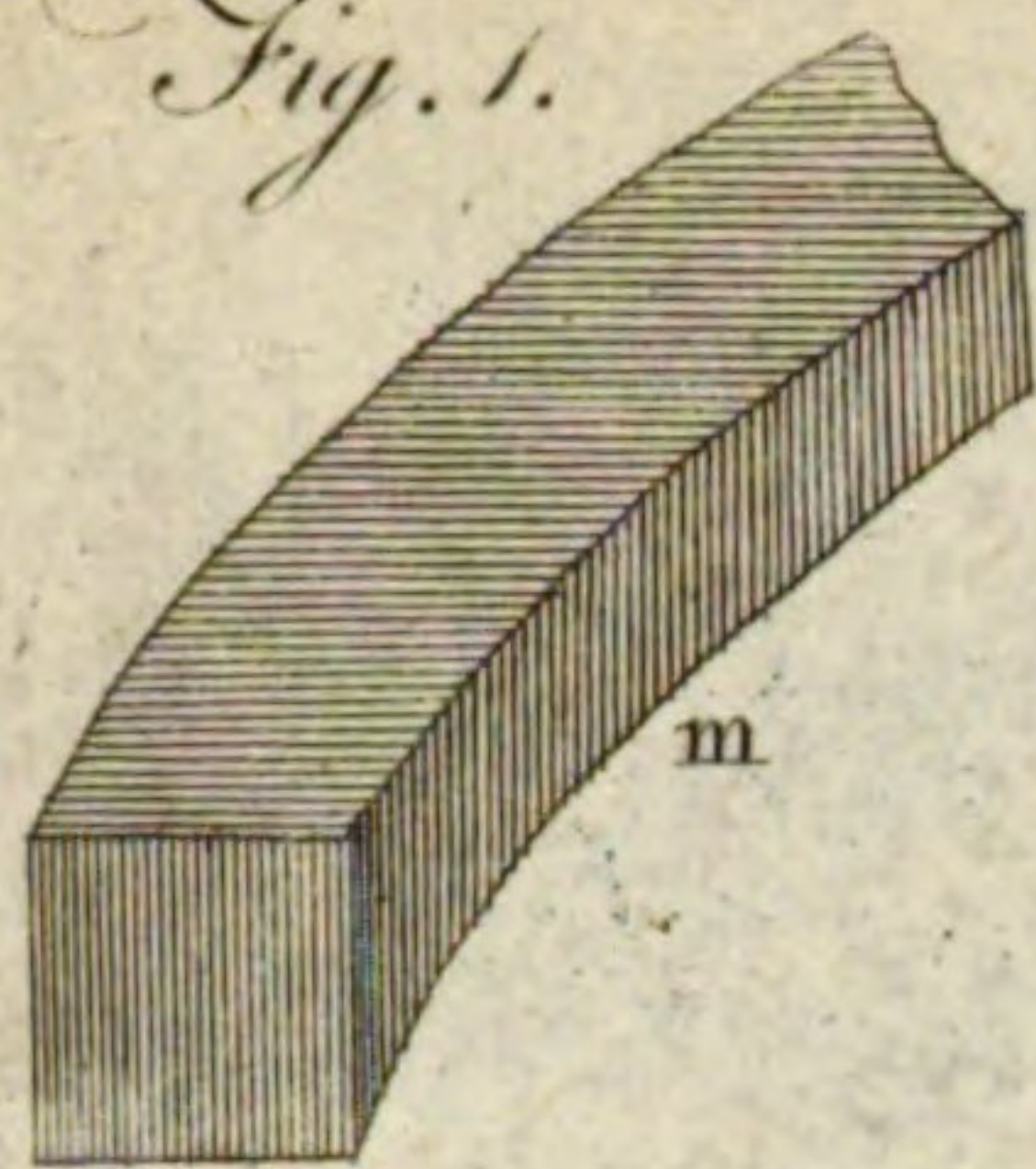


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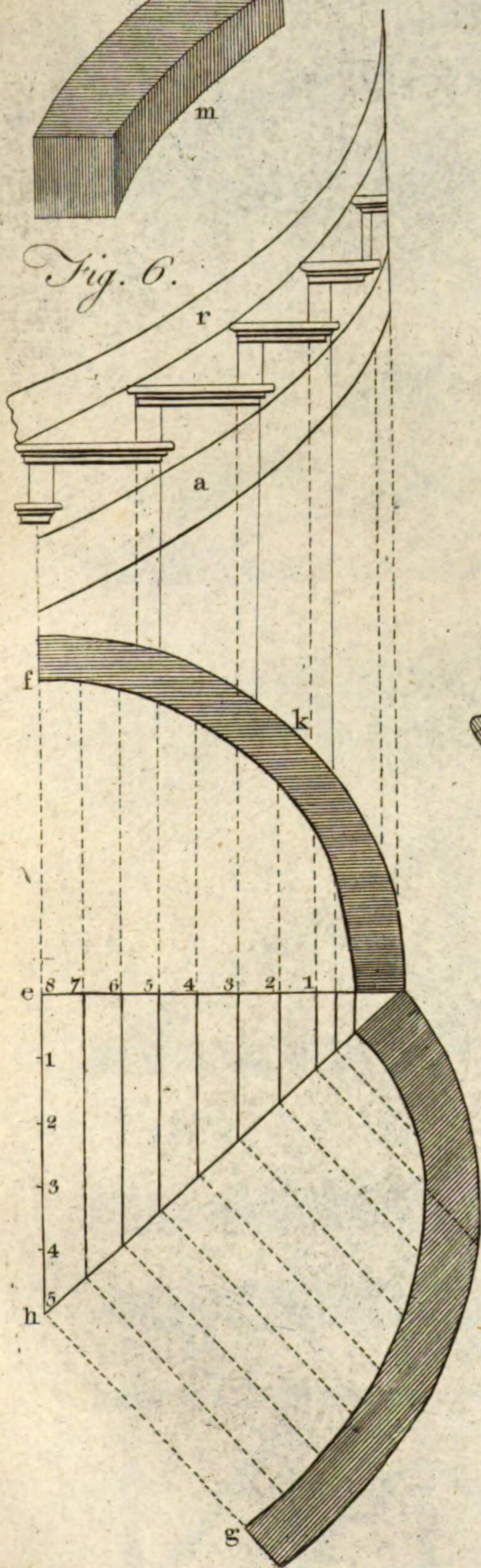


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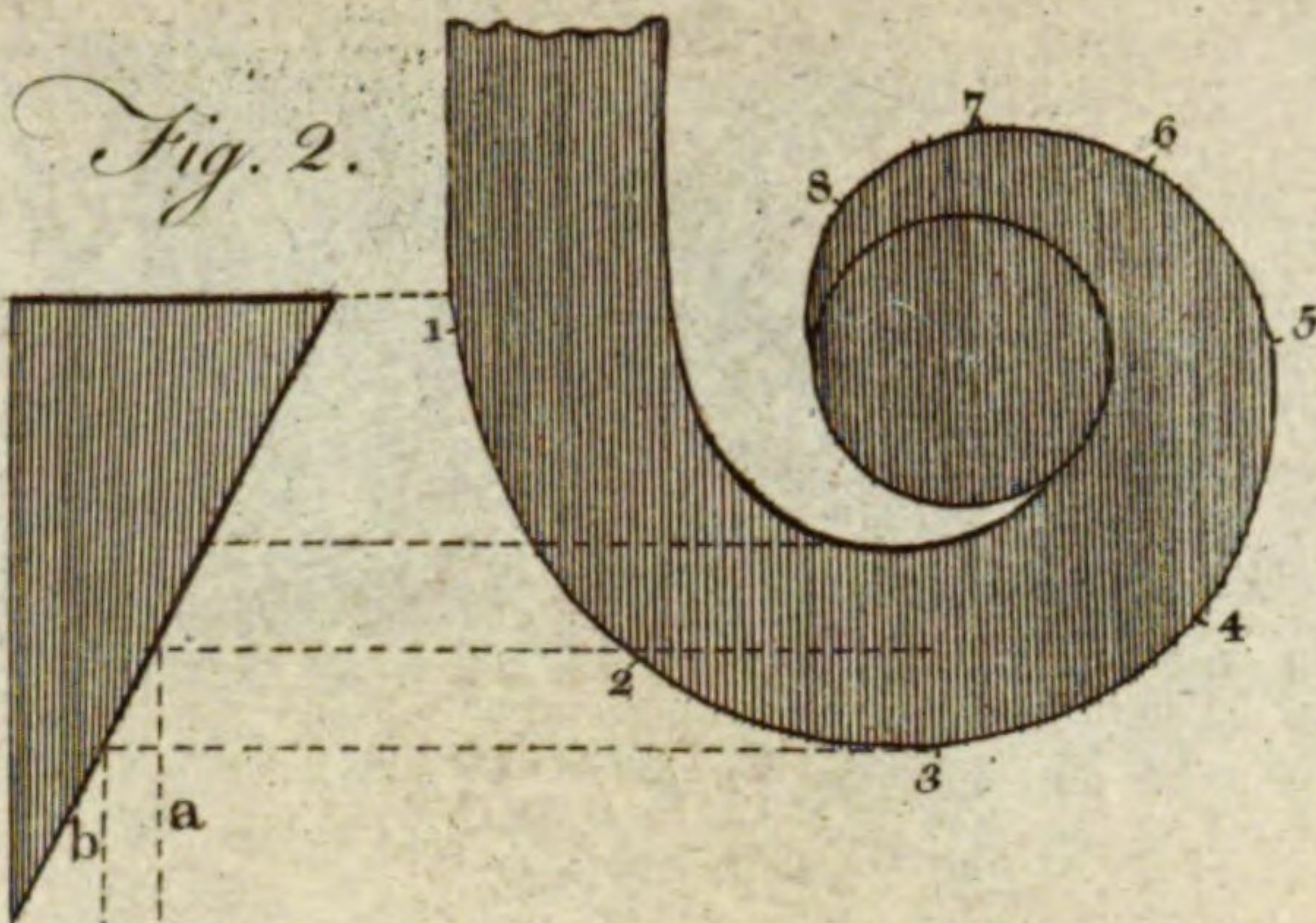


Fig. 3.



Fig. 4.

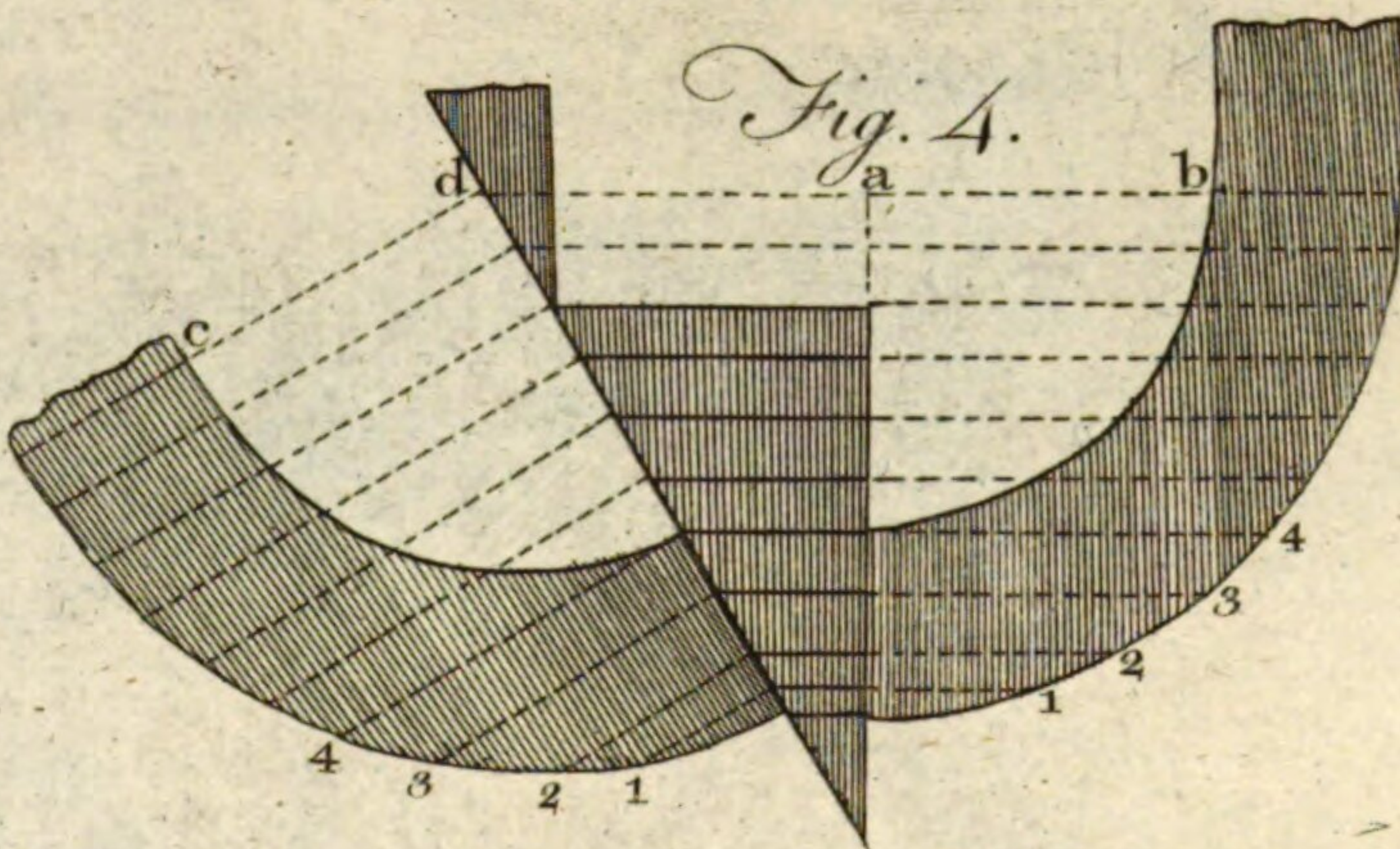


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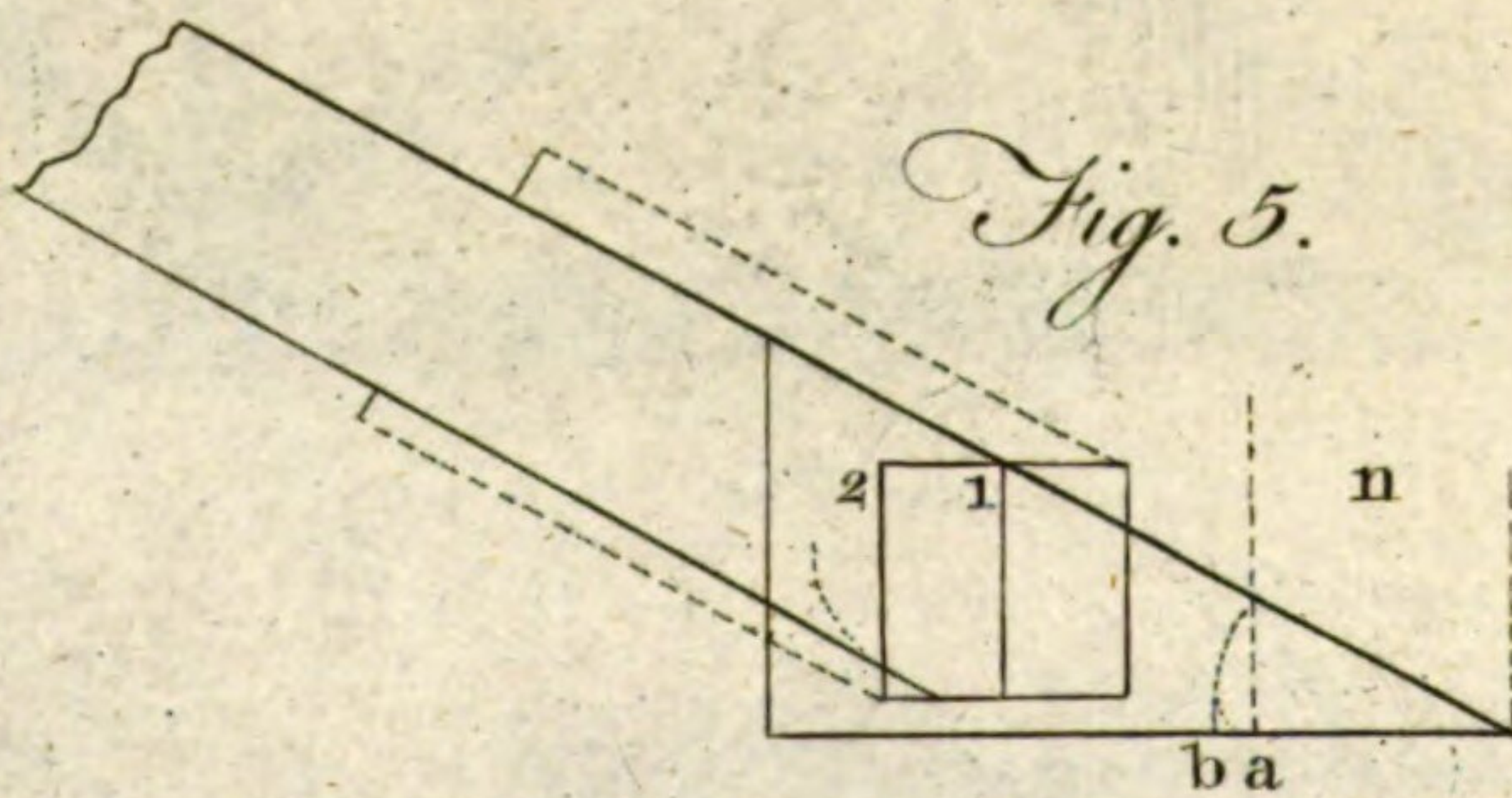
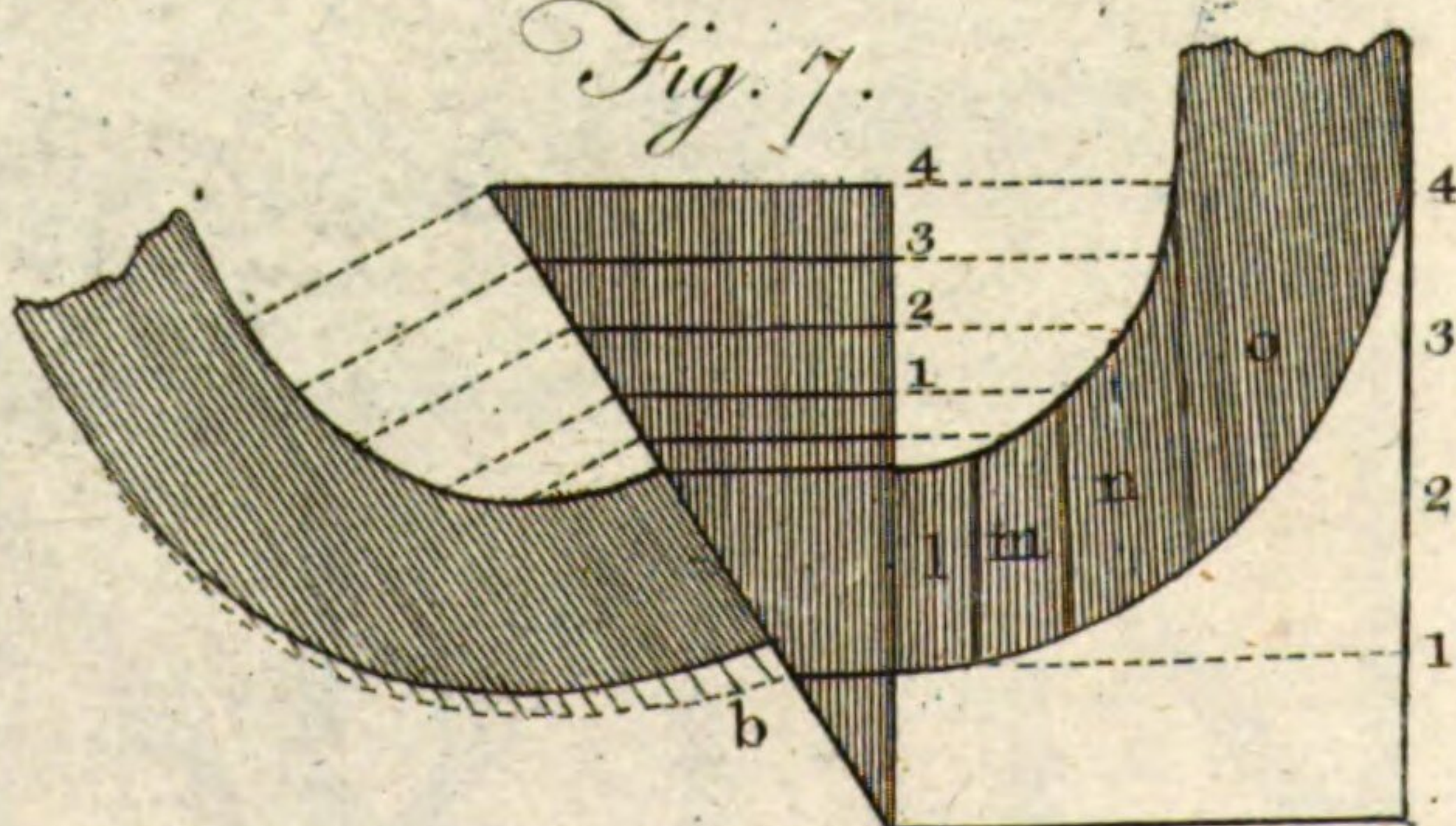


Fig. 7.



A Bell Prin. Wal. Sculptor fecit.

Fig. 1.

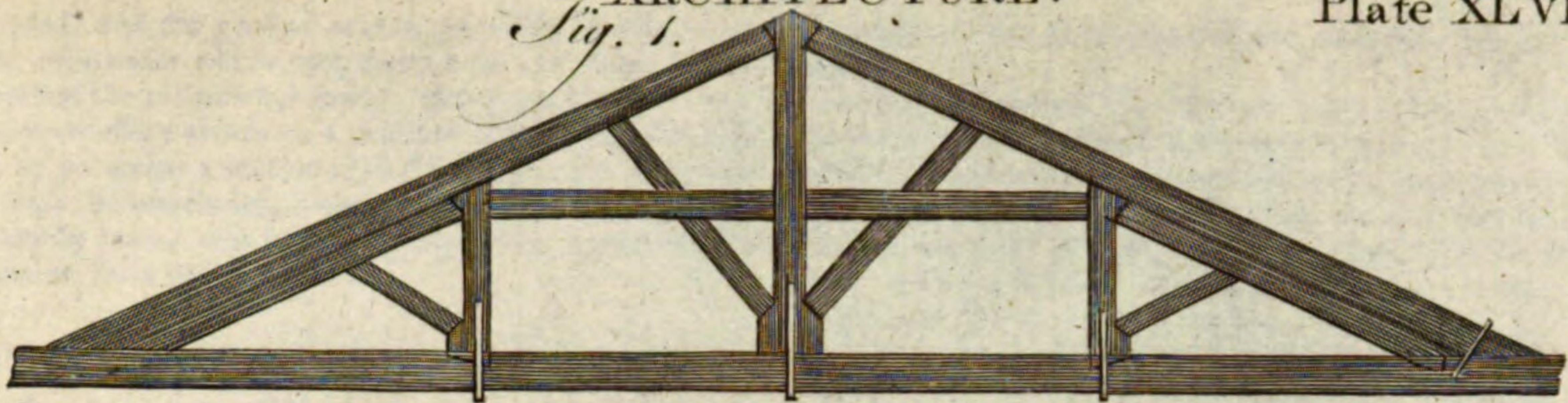


Fig. 2.

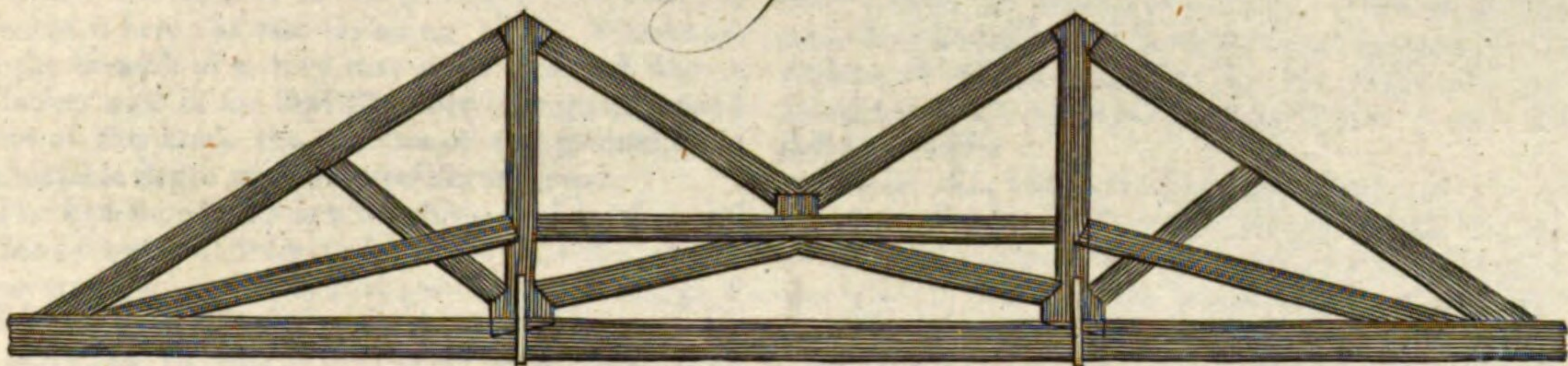


Fig. 3.

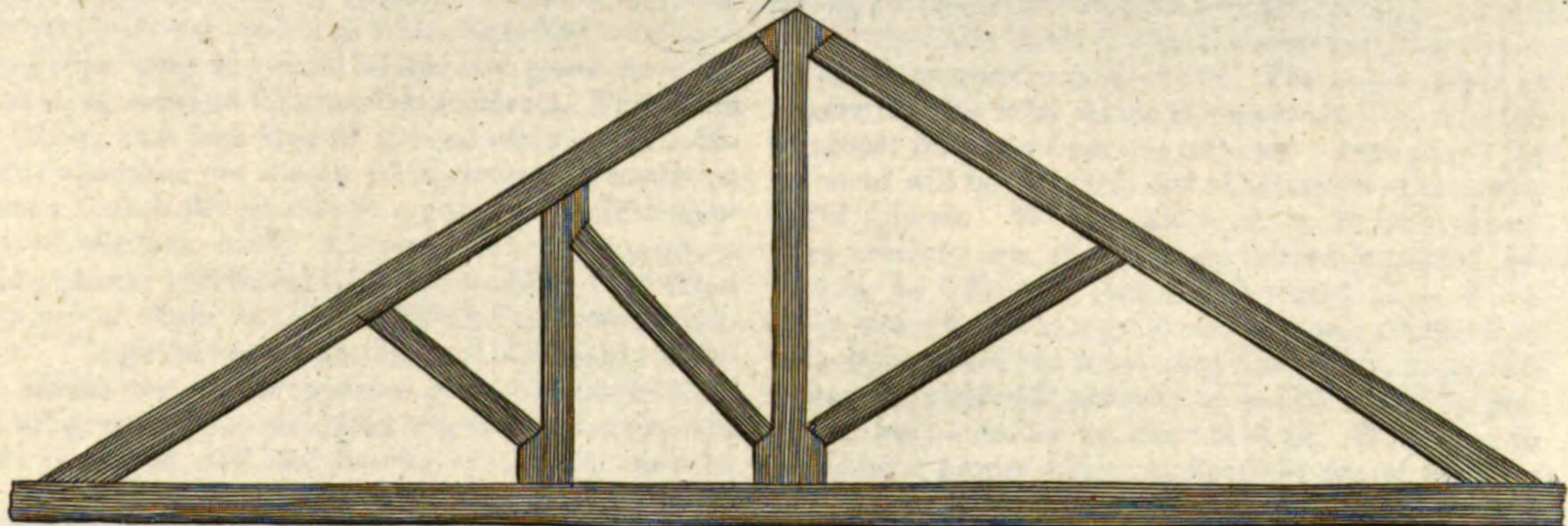


Fig. 4.

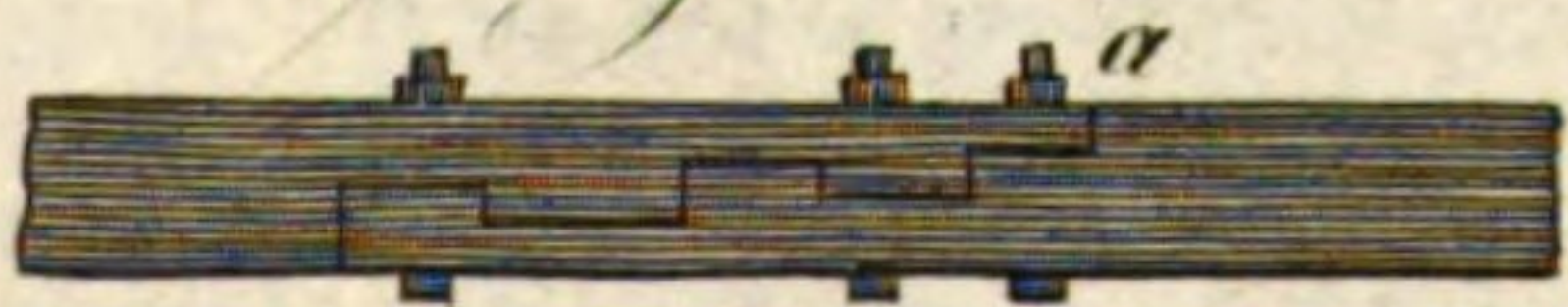
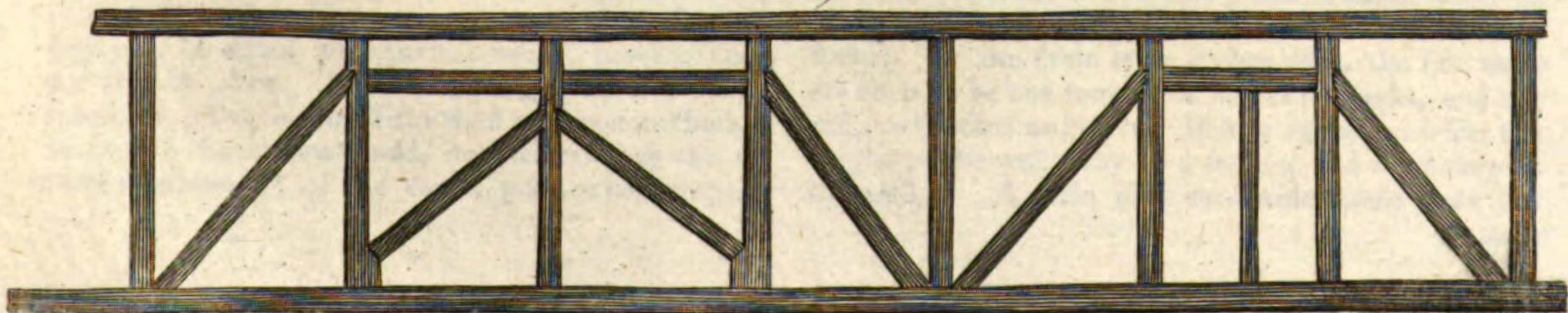
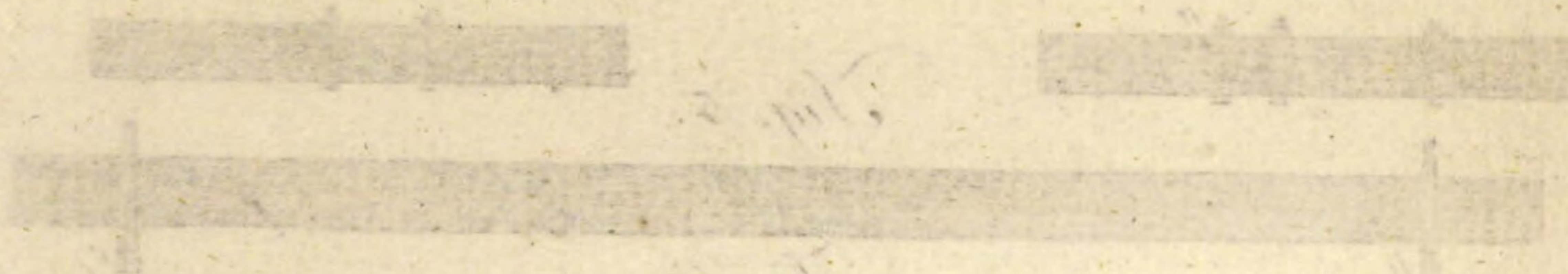
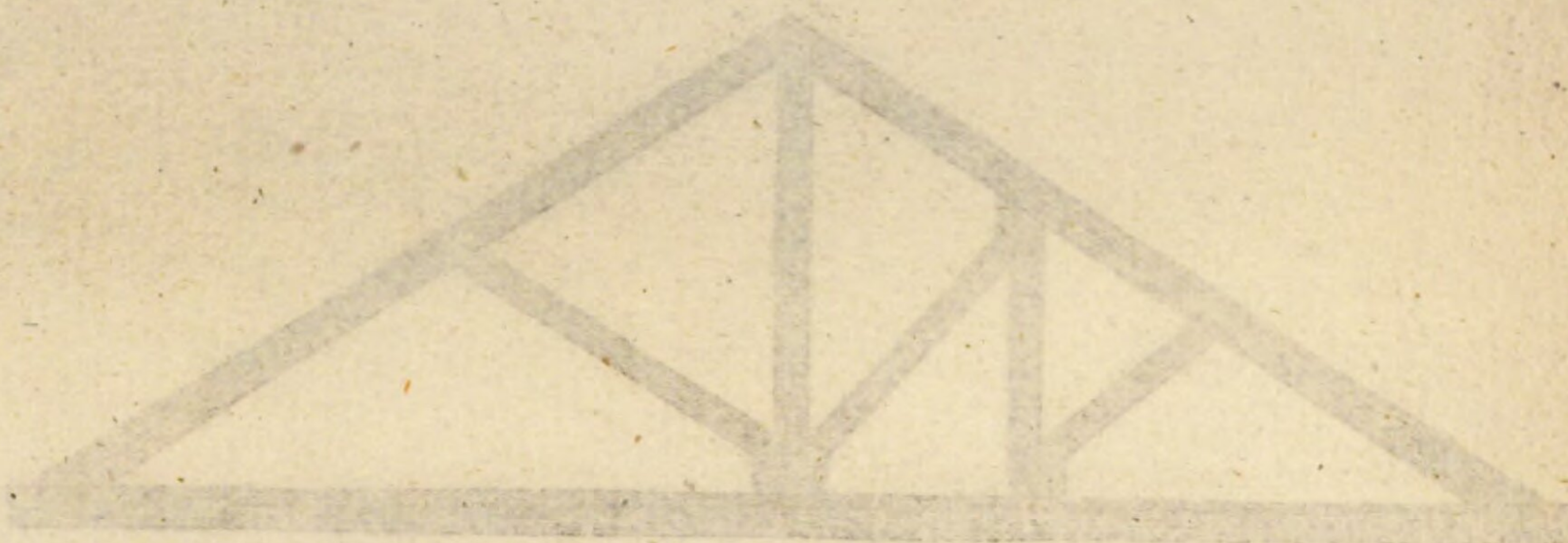


Fig. 5.



Fig. 6.





Practice. buried, and the ground near it generally marshy from the rain-water which runs down from the hills, which renders the air unwholesome. As a garden also is a very necessary article to a country habitation, the soil is by no means a matter of indifference; and therefore it may be concluded, that an elevated situation on a gravelly loam, near some running water, is the best situation for a country house.

95 CHAP. II. *Of the construction of Edifices in General.*

THE proper situation of a house, or any other building, being chosen, according to its intended nature, the next thing to be considered is to lay the foundation in a proper manner. The only security of a house, or any other building whatever, is in having a good foundation, and no error is so dangerous as that which is committed here; as the shrinking of the foundation but the breadth of a straw may cause a rent of five or six inches wide in the superstructure. To guard against errors of this kind, the qualities of the ground for a considerable depth must be carefully observed.

96
Qualities of the ground necessary to be examined.

The best foundation is that which consists of gravel or stone; but, in order to know whether the inferior strata are sufficient for the support of the building, it will be advisable to sink wells at some little distance. By attending to what is thrown up in digging these, the architect will be acquainted with what lies under the stony or gravelly bed which on the surface promises so much security, and will know what measures to take.

97
Rocky ground sometimes dangerous.

But though a stony or gravelly bottom is undoubtedly the most sure and firm, where all is found beneath, there is no kind of ground which may prove more fallacious, or occasion such terrible accidents. The reason of this is, that such kind of ground often contains absolute vacuities; nor is rock itself, though a foundation upon a rock is strong even to a proverb, free from dangers of the same kind. Caverns are very frequent in rocky places; and should an heavy building be erected over one of these, it might suddenly fall down altogether. To guard against accidents of this kind, Palladio advises the throwing down great weights forcibly on the ground, and observing whether it sounds hollow, or shakes; and the beating of a drum upon it, by the sound of which an accustomed ear will know whether the earth is hollow or not.

Where the foundation is gravel, it will be proper to examine the thickness of the stratum, and the qualities of those that lie under it, as they have appeared in digging. If the bed of gravel is thick, and the under strata of a sound and firm kind, there needs no assistance; if otherwise, we must have recourse to various methods in order to supply the defect.

98
Sandy or boggy ground how managed.

The other matters which may occur for a foundation are clay, sand, common earth, or rotten boggy ground. Clay will often both raise and sink a foundation; yet it has a solidity which, with proper management, is very useful. The marshy, rotten or boggy ground, is of all others the worst; yet even upon this great buildings may be raised with perfect safety, provided proper care be taken. In case of boggy earths, or unfirm sand, piling is one of the most common methods of securing a foundation; and, notwithstanding the natural disadvantage of the earth, piles, when properly

executed, are one of the firmest and most secure foundations.

In foundations near the edge of waters, we should always be careful to found to the very bottom, as many terrible accidents have happened from the ground being undermined by rivers. The same method is to be followed when the ground on which we build has been dug or wrought before. It ought never to be trusted in the condition in which it is left; but we must dig through it into the solid and unmoved ground, and some way into that, according to the weight and bigness of the intended edifice. The church of St Peter's at Rome is an instance of the importance of this last observation. That church is in great part built upon the old circus of Nero; and the builders having neglected to dig through the old foundation, the structure is consequently so much the weaker. The walls were judged of strength enough to bear two steeples upon the corners of the frontispiece; but the foundation was found too weak when it was impossible to remedy the defect perfectly.

Practice.
99
Foundations near waters dangerous.

100
Defect in St Peter's at Rome.

Before the architect, however, begins to lay the foundation of the building, it will be proper to construct such drains as may be necessary for carrying off the rain, or other refuse water that would otherwise be collected and lodge about the house. In making of drains for carrying off this water, it will be necessary to make large allowances for the different quantities that may be collected at different times. It must also be considered, that water of this kind is always loaded with a vast quantity of sediment, which by its continual falling to the bottom will be very apt to choak up the drain, especially at those places where there happen to be angles or corners in its course. The only method of preventing this is by means of certain cavities disposed at proper distances from one another. Into these the sediment will be collected, and they are for that reason called *seespools*. With regard to these, the only directions necessary are, that they be placed at proper distances, be sufficiently large, and placed so as to be easily cleaned. It is a good rule to make a seepool at each place where the water enters the drain; as by this means a considerable quantity of sediment will be prevented from entering the channel at all. Others are to be made at proper distances, especially where there are any angles. They must be made sufficiently large; the bigger, in moderation, the better; and they must also be covered in such a manner as to be easily got at in order to be cleaned. But as putrid water is exceedingly noxious, it will be necessary to carry up a brick funnel over every seepool, in order to prevent the collection of the putrid effluvia, which would otherwise occasion the death of the person who cleaned it.

101
Drains how made.

102
Seespools.

All drains ought to be arched over at top, and may be most conveniently built of brick. According to their different sizes, the following proportions of height and thickness may be observed. If the drain is 18 inches wide, the height of the walls may be one foot, and their thickness 9 inches; the bottom may be paved with brick laid flatwise, and the arch turned 4 inches. If the drain is 22 inches wide, the side walls are then to be one foot three inches in height, and the rest constructed as before. If it is 14 inches wide, the height of the walls may be 9 inches, and the sweep of the arch 4. A drain of a yard wide should have the

103
Proportions of drains.

same.

Practice.

104
Foundation
of buildings
how laid.

same height, and the arch turned over it ought to be 9 inches thick. Upon the same principles and proportions may other drains of any size be constructed.

The sewers and drains being constructed in a manner proportioned to the size of the intended building, the architect may next proceed to lay the foundation of the walls. Here the first care must be, that the floor of the foundation be perfectly smooth and level. The Italians begin with laying over it an even covering of strong oak plank; and upon that they lay, with the most exact care, the first course of the materials. Whether we take this method, or begin upon the naked floor, all must be laid with the most exact truth by rule and line. When the board plat is laid, a course of stone is the best first bed, and this is to be laid without mortar; for lime would make the wood decay, which otherwise, in a tolerably good soil, will last for ages. After this, all the courses should follow with the same perfect evenness and regularity. If the materials are brick, they should be laid on with an equal, and not too great quantity of mortar: if stone, they ought to be placed regularly, and in the same situation in which they lay in the quarry: for many stones which will bear any weight flatwise, and in their natural position, are of such a grain, that they will split otherwise. The joinings of the under course must be covered by the solid of the next course all the way up; and the utmost care must be taken that there be no vacuity left in the wall, for the weight will most certainly crush it in. The less mortar there is in a foundation, the better. Its use is to cement the bricks and stones together; and the even-er they are, the less will be required for that purpose. Where mortar is used to fill up cavities, it becomes part of the wall; and not being of equal strength with the solid materials, it takes from the firmness of the building. For the same reason, nothing can be more absurd than to fill up a foundation with loose stones or bricks thrown in at random; and where this is done, the ruin of the building is inevitable. Where the foundation of a principal wall is laid upon piles, it will be necessary also to pile the foundations of the partitions, though not so strongly.

105
Thickness
and dimi-
nution of
walls, &c.

The thickness of foundation-walls in general ought to be double that of the walls which they are to support. The looser the ground, the thicker the foundation-wall ought to be; and it will require the same addition also in proportion of what is to be raised upon it. The plane of the ground must be perfectly level, that the weight may press equally every where: for when it inclines more to one side than another, the wall will split. The foundations must diminish as they rise, but the perpendicular is to be exactly kept in the upper and lower parts of the wall; and this caution ought to be observed all the way up with the same strictness. In some ground, the foundation may be arched; which will save materials and labour, at the same time that the superstructure has an equal security. This practice is peculiarly serviceable where the foundation is piled.

106
Diminution
of the
thickness
of walls.

As the foundation-walls are to diminish in thickness, so are those which are built upon them. This is necessary in order to save expence, but is not absolutely so to strengthen the wall; for this would be no less strong though it was continued all the way to the top of an equal thickness, provided the perpendicular was

exactly kept. In this the ancients were very expert; for we see, in the remains of their works, walls thus carried up to an exorbitant height. It is to be observed, however, that, besides perfect truth in their perpendiculars, they never grudged iron-work, which contributed greatly to the strength of their buildings. The thickness and diminution of walls is in a great measure arbitrary. In common houses built of brick, the general diminution from the bottom to the top is one half the thickness at the bottom; the beginning is two bricks, then a brick and a half, and lastly one brick, thickness. In larger edifices, the walls must be made proportionally thicker; but the diminution is preserved much in the same manner. When stones are used regard must be had to their nature, and the propriety of their figures for holding one another. Where the wall is to be composed of two materials, as stone and brick, the heaviest ought always to be placed undermost.

There is one farther particular regarding the strength of a plain wall, and that is, the fortifying its angles. This is best done with good stone on each side, which gives not only a great deal of strength, but a great deal of beauty. Pilasters properly applied are a great strengthening to walls. Their best distance is about every 20 feet, and they should rise five or six inches from the naked of the wall. A much slighter wall of brick with this assistance, is stronger than a heavier and massier one built plain. In brick walls of every kind, it is also a great addition to their strength to lay some chief courses of a larger and harder matter; for these serve like sinews to keep all the rest firmly together, and are of great use where a wall happens to sink more on one side than another. As the openings in a wall are all weakenings, and as the corners require to be the strongest parts, there should never be a window very near a corner. Properly, there should always be the breadth of the opening firm to the corner. In the most perfect way of forming the diminution of walls, the middle of the thinnest part being directly over the middle of the thickest, the whole is of a pyramidal form; but where one side of the wall must be perpendicular and plain, it ought to be the inner, for the sake of the floors and cross walls. The diminished side, in this case, may be covered with a fascia or cornice, which will at once be a strength and ornament.

107
Angle-how
fortified.108
Windows
improper
near the
corners.

Along with the construction of walls, that of the chimneys must also be considered; for errors in the construction of these, will render the most elegant building extremely disagreeable. The common causes of smoking are either that the wind is too much let in above at the mouth of the shaft, or the smoke is stifled below; and sometimes a higher building, or a great elevation of the ground behind, is the source of the mischief; or lastly, the room in which the chimney is may be so small or close, that there is not a sufficient current of air to drive up the smoke. Almost all that can be done, while the walls are constructing, to prevent smoke, is, to make the chimney vent narrower at bottom than at top: yet this must not be carried to an extreme; because the smoke will then linger in the upper part, and all the force of the draught will not be able to send it up. As for the methods of curing smoky chimneys in houses already built, see the article CHIMNEY.

109
Chimneys.

After

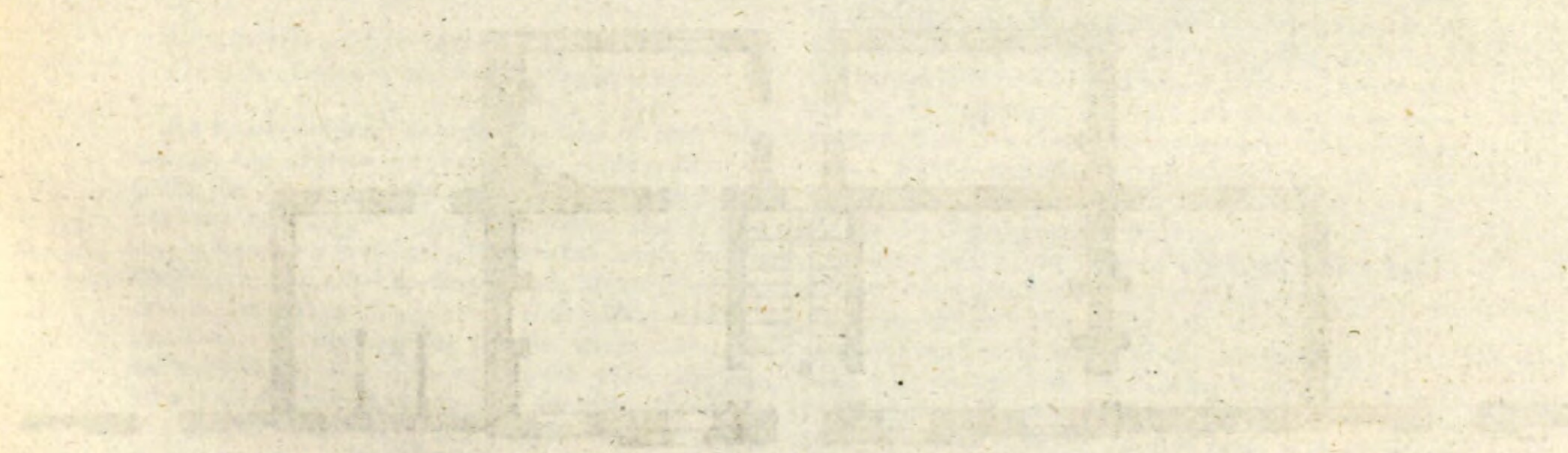


Fig. 1.

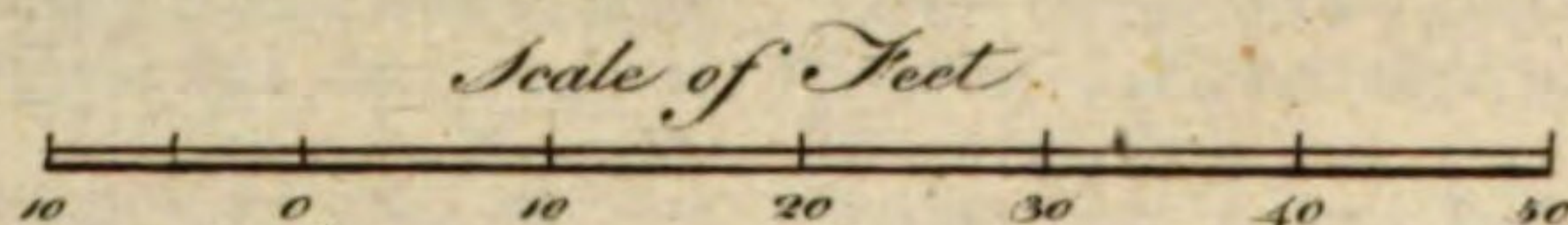
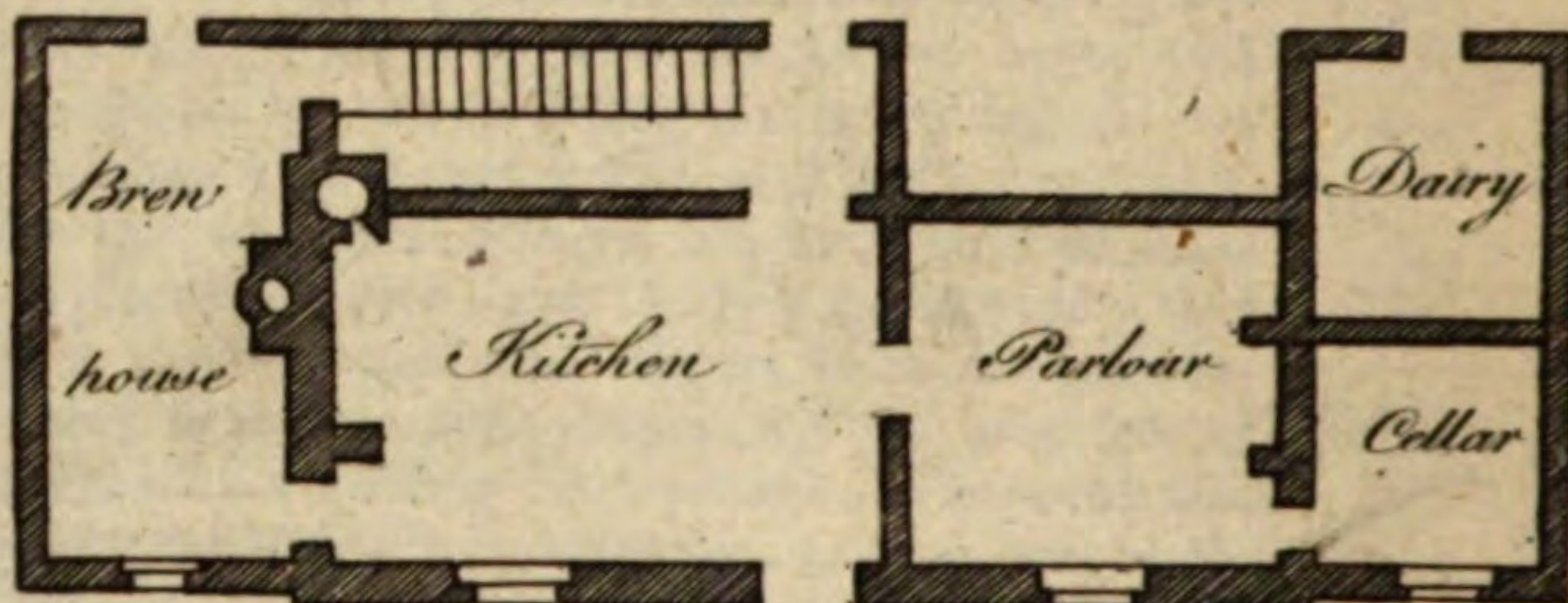
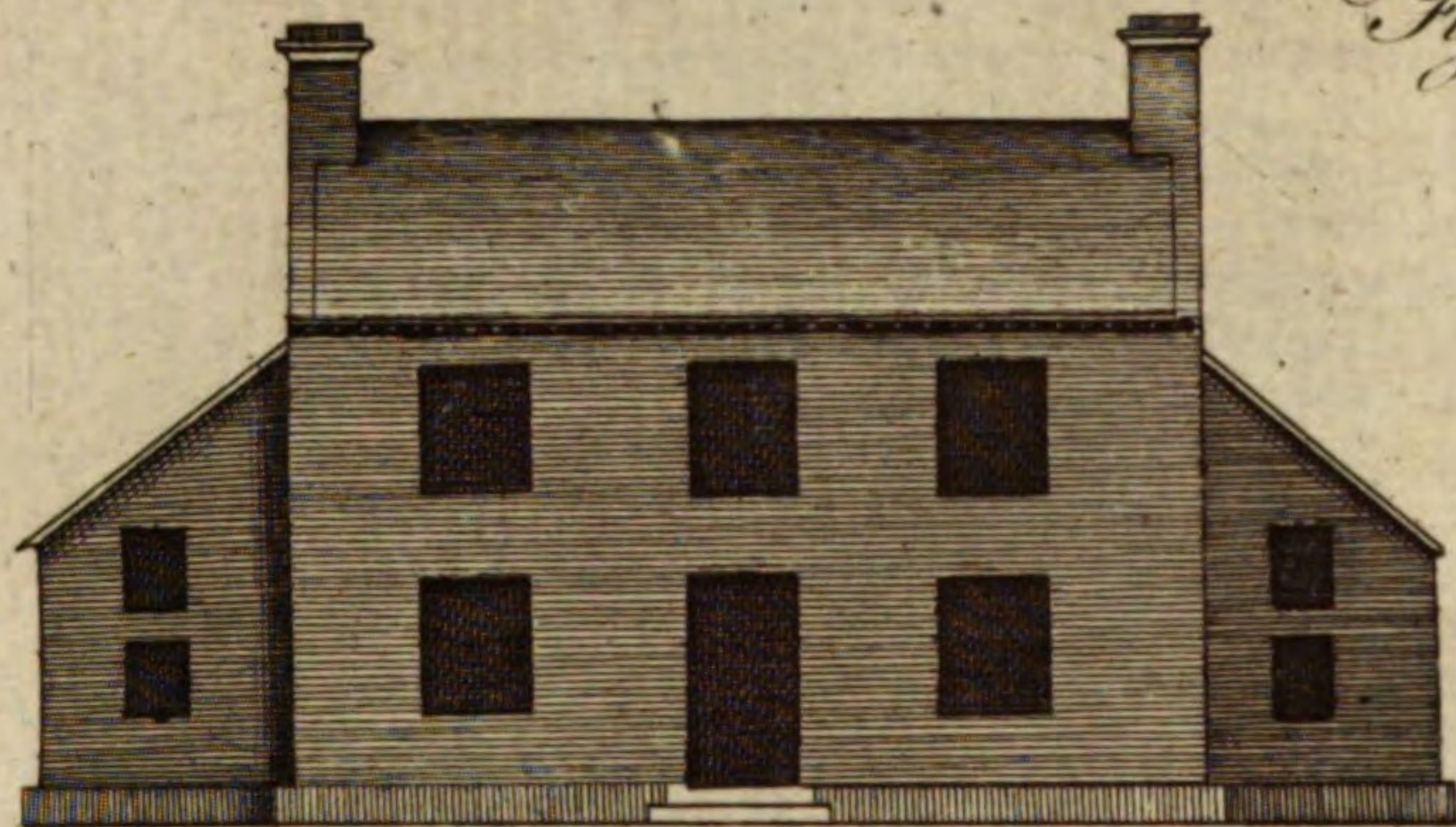
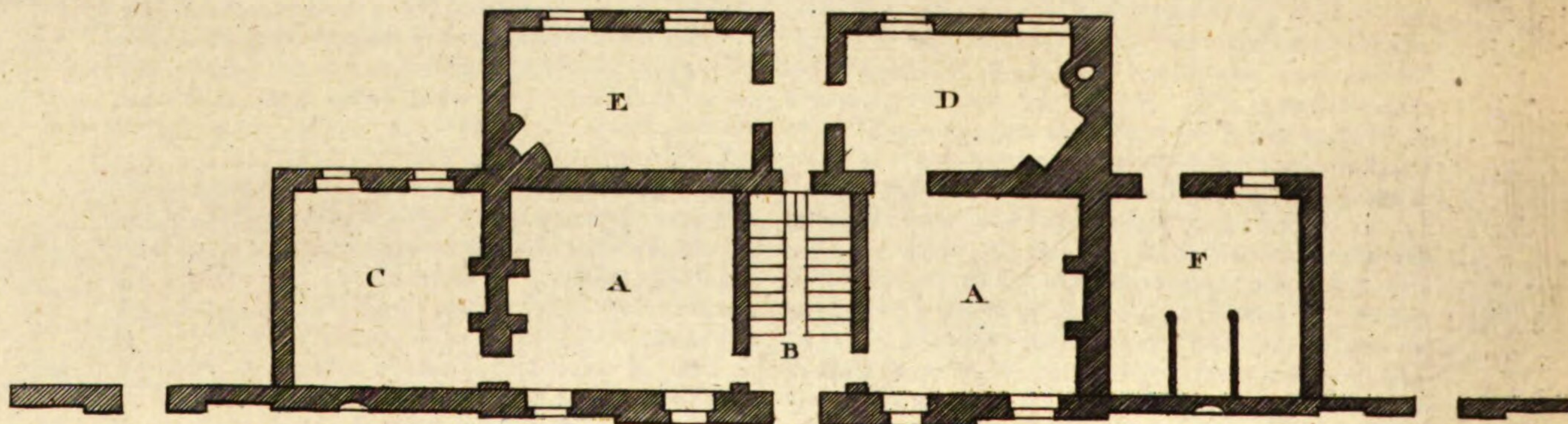
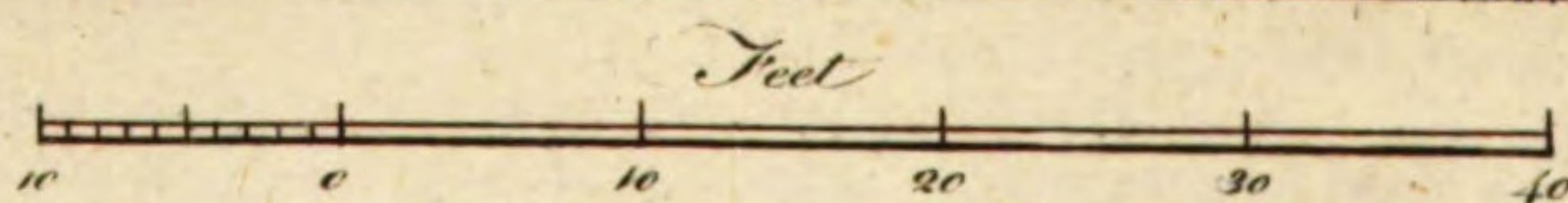
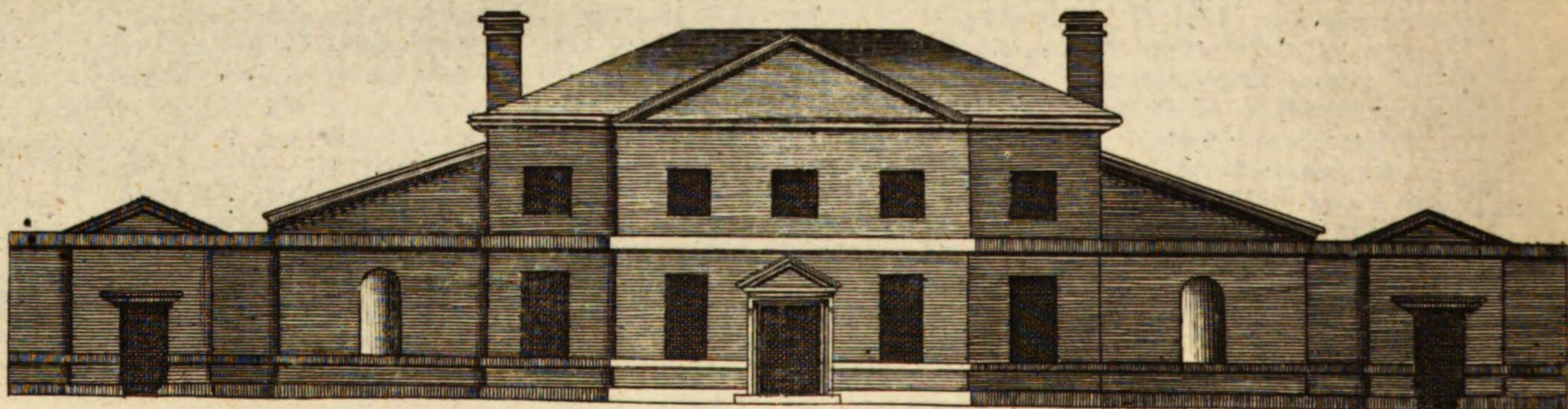


Fig. 2.



AA are two Parlours 15 D Kitchen
 B Stair Case E Washhouse are Shades
 C Study F Stable

Practice.

116
Roofs.

After the walls are finished, the roof is the next consideration: but concerning it very little can be said; only that its weight must be proportioned to the strength of the walls. It must also be so contrived as to press equally upon the building; and the inner walls must bear their share of the load as well as the outer ones. A roof ought neither to be too massy nor too light; as being necessary for keeping the walls together by its pressure, which it is incapable of doing while too light; and if too heavy, it is in danger of throwing them down. Of these two extremes, however, the last is to be accounted the worst.

117
Floors.

With regard to the floors, they are most commonly made of wood; in which case, it will be necessary that it should be well seasoned by being kept a considerable time before it is used. The floors of the same story should be all perfectly on a level; not even a threshold rising above the rest: and if in any part there is a room or closet whose floor is not perfectly level, it ought not to be left so, but raised to an equality with the rest; what is wanting of the true floor being supplied by a false one.

In mean houses, the floors may be made of clay, ox blood, and a moderate portion of sharp sand. These three ingredients, beaten thoroughly together and well spread, make a firm good floor, and of a beautiful colour. In elegant houses, the floors of this kind are made of plaster of Paris, beaten and sifted, and mixed with other ingredients. This may be coloured to any hue by the addition of proper substances; and, when well worked and laid, makes a very beautiful floor. Besides these, halls, and some other ground-rooms, are paved or floored with marble or stone; and this either plain or dotted, or of a variety of colours: but the universal practice of carpeting has, in a great measure, set aside the bestowing any ornamental workmanship upon floors. In country buildings, also, floors are frequently made of bricks and tiles. These, according to their shapes, may be laid in a variety of figures: and they are also capable of some variation in colour, according to the nature of the earth from which they were made. They may be laid at any time; but for those of earth or plaster, they are best made in the beginning of summer, for the sake of their drying.

CHAP. III. *Of the distribution of the apartments of Houses with other conveniences.*

118
Plan of a
farm-house.

As houses are built only for the sake of their inhabitants, the distribution of the apartments must of necessity be directed by the way of life in which the inhabitants are engaged. In the country, this is commonly farming; and here, besides the house for the family, there is also necessary a barn for the reception of the produce of the ground, a stable for cattle, a cart-house for keeping the utensils under cover, and sheds for other uses. To accomplish these purposes, let a piece of ground be taken of five times the extent of the front of the house, and inclosed in the least expensive manner. Back in the centre of this let the house be placed, and in the front of the ground the barn and the stable, with the adjoining sheds. These are to be set, one on each side, to the extreme measure

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of the inclosed ground: they will thus fill up a part of the entrance, and will leave all about the house some inclosed ground by way of yard. From the barn to the stable may be extended a fence with a gate in the middle, and this gate ought to front the door of the house.

This much being settled, the plan of the house and out-buildings may be made as follows. The door may open into a plain brick passage, at the end of which may be carried up a small stair-case. On one side of the passage may be a common kitchen; and on the other side a better or larger room, which will serve the family by way of parlour. Beyond this may stand on one side the pantry, and on the other the dairy room, the last being twice the size of the former. They are placed on the same side with the parlour, on account of the heat of the kitchen, which renders it improper to be near them. On the kitchen side, a brew-house may very conveniently be placed. More rooms may be added on the ground-floor as occasion requires; and the upper story is to be divided into bed-chambers for the family, with garrets over them for the servants.—A house of this kind is represented Plate XLIX. fig. 1; and one of a somewhat better kind, fig. 2. where a private gentleman who has a small family may find conveniency.

On Plate L. is represented a gentleman's country-seat, built on a more elegant plan. Here the front may extend 65 feet in length, the depth in the centre being 40 feet, and in each of the wings 45. The offices may be disposed in wings; the kitchen in the one, and the stables in the other; both of which, however, may correspond in their front with the rest of the building, which they ought also to do with one another. These wings may have a projection of 13 feet from the dwelling-house, to which they ought to be connected, not by straight lines, but by curves, as represented fig. 2.

The best proportion of these offices to a house extending 65 feet in front, is 35 feet. If they are smaller, the house will look gigantic; if larger, they will lessen its aspect. To a front of 35 feet, a depth of 48 is a very good proportion. There ought also to be a covered communication between the dwelling-house and offices, which must not appear only to be a plain blank wall, but must be ornamented with gates, as in the figure. The arch by which the offices are joined to the dwelling-house must be proportioned to the extent of the buildings; and there cannot be a better proportion than five feet within the angles of the buildings. By this means the wings, which have only a projection of 13 feet, will appear to have one of 18, and the light will be agreeably broken.

With regard to the internal distribution of a house of this kind, the under story may be conveniently divided into three rooms. The hall, which is in the centre, will occupy the whole of the projecting part, having a room on each side. The length of the hall must be 24 feet, and its breadth 12: the rooms on each side of it must be 16 feet long, and 11 wide. Of these two front rooms, that on the right hand may be conveniently made a waiting room for persons of better rank, and that on the left hand a dressing-room for the master of the house. Behind the hall may run

I i

a

119
Of an elegant
country seat.

Practice.

a passage of four feet and an half, leading to the apartments in the hinder part of the house and the stair case. These may be disposed as follows. Directly behind the hall and this passage the space may be occupied by a saloon, whose length is 24 feet and its breadth 17. On the left hand of the passage, behind the hall, is to be placed the grand stair-case; and as it will not fill the whole depth, a pleasant common parlour may terminate on that side of the house. On the other side, the passage is to lead to the door of the great dining parlour, which may occupy the whole space.

120
Another.

A plan of a house of the same kind, but somewhat different in the distribution, is represented below in the same plate. The front here extends 68 feet, and the wings project 28 feet; their depth is 48, and their breadth 36. The hall may be 26 feet long and 17 broad. On the left hand of the hall may be a waiting-room 16 feet long and 10 broad; behind which may be a handsome dining-room. The passage into this waiting-room should be at the lower end of the hall; and it must have another opening into the room behind it. On the right hand of the hall is the place of the great stair-case, for which a breadth of 16 feet three inches is to be allowed. In the centre of the building, behind the hall, may be a drawing-room 26 feet long and 16 broad; and behind the stair-case will be room for a common parlour of 16 feet square. The passage of communication between the house and wings may be formed into colonnades in a cheap manner behind: a flight of steps, raised with a sweep occupying the centre of each, and leading up to a door, and the covering being no more than a shed supported by the plainest and cheapest columns.

The two wings now remain to be disposed of. That on the right hand may contain the kitchen and offices belonging to it, and the other the stables. The front of the right hand wing may be occupied by a kitchen entirely, which will then be 30 feet long and $16\frac{1}{2}$ wide; or it may be made smaller, by setting off a small room to the right. Twenty-two feet by 16 will then be a good bigness. The other room will then have the same depth of 16 feet, and the width to the front may be $7\frac{1}{2}$. Beyond the kitchen may stand the stair-case, for which $7\frac{1}{2}$ feet will be a proper allowance; and to the right of this may be a scullery 12 feet 10 inches deep from the back front by 7 in breadth. To the left of the stair may be a servants hall 16 feet square, and behind that a larder 12 feet 10 by 14 feet 6. In the centre of the other wing may be a double coach-house: for which there should be allowed the whole breadth of the wing, with 10 feet 6 inches in the clear; and on each side of this may be the stables. The external decorations of the front and wings will be better understood from the figure than they can be by any description.

121
Of the
Earl of
Wemyss's
house.

Plate LI. shows the plan and elevation of the house of the Earl of Wemyss at Newmills. The proportions of the rooms are marked in the plan; and the front, being decorated with columns of the Ionic order, will sufficiently show in what manner any of the five orders may be induced with propriety and elegance.

CHAP. IV. *Of Aquatic Buildings.*

1. OF BRIDGES.

122

THESE are constructed either of wood or stone; of which the last are evidently the strongest and most durable; and therefore, in all cases, to be preferred where the expence of erecting them can be borne. The proper situation for them is easily known, and requires no explanation; the only thing to be observed is, to make them cross the stream at right angles, for the sake of the boats that pass through the arches, with the current of the river; and to prevent the continual striking of the stream against the piers, which in a long course may endanger their being damaged and destroyed in the end.

Bridges built for a communication of high roads, ought to be so strong and substantial as to be proof against all accidents that may happen, to have a free entrance for carriages, afford an easy passage to the waters, and be properly adapted for navigation, if the river admits of it. Therefore the bridge ought to be at least as long as the river is wide in the time of its greatest flood: because the sloping of the waters above may cause too great a fall, which may prove dangerous to the vessels, and occasion the under gravelling the foundation of the piers and abutments; or, by reducing the passage of the water too much in time of a great flood, it might break through the banks of the river, and overflow the adjacent country, which would cause very great damages; or if this should not happen, the water might rise above the arches, and endanger the bridge to be overset, as has happened in many places.

When the length of the bridge is equal to the breadth of the river, which is commonly the case, the current is lessened by the space taken up by the piers; for which reason this thickness should be no more than is necessary to support the arches; and it depends, as well as that of the abutments, on the width of the arches, their thickness, and the height of the piers.

The form of the arch is commonly semicircular; but when they are of any great width, they are made elliptical, because they would otherwise become too high. This has been done at the Pont Royal at Paris, where the middle arch is 75 feet, and its height would have been 37.5 feet, instead of which it is only 24 by being made elliptical.

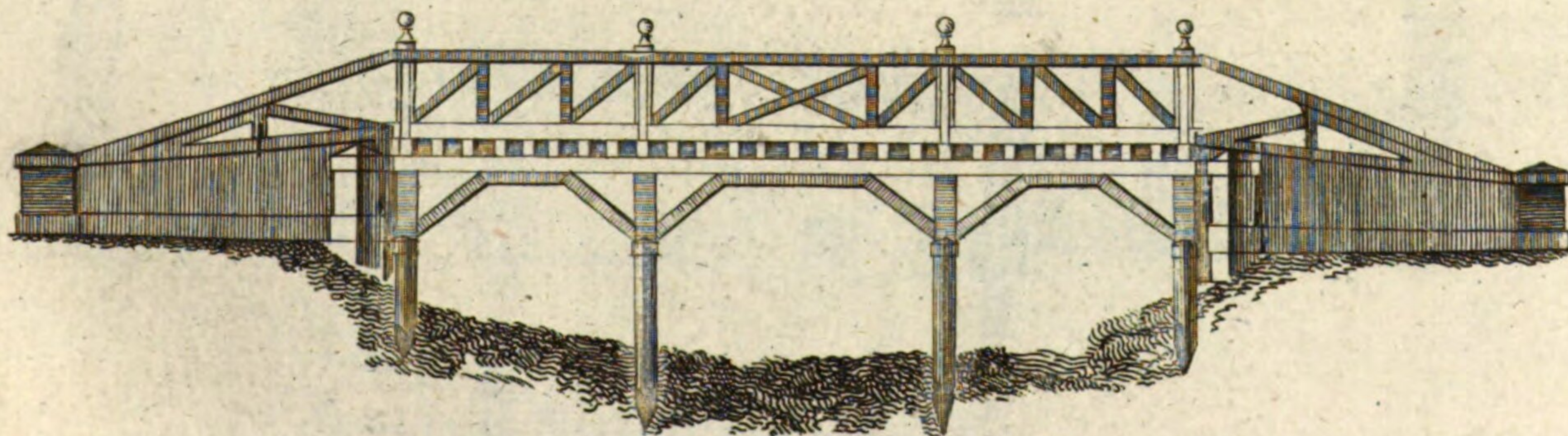
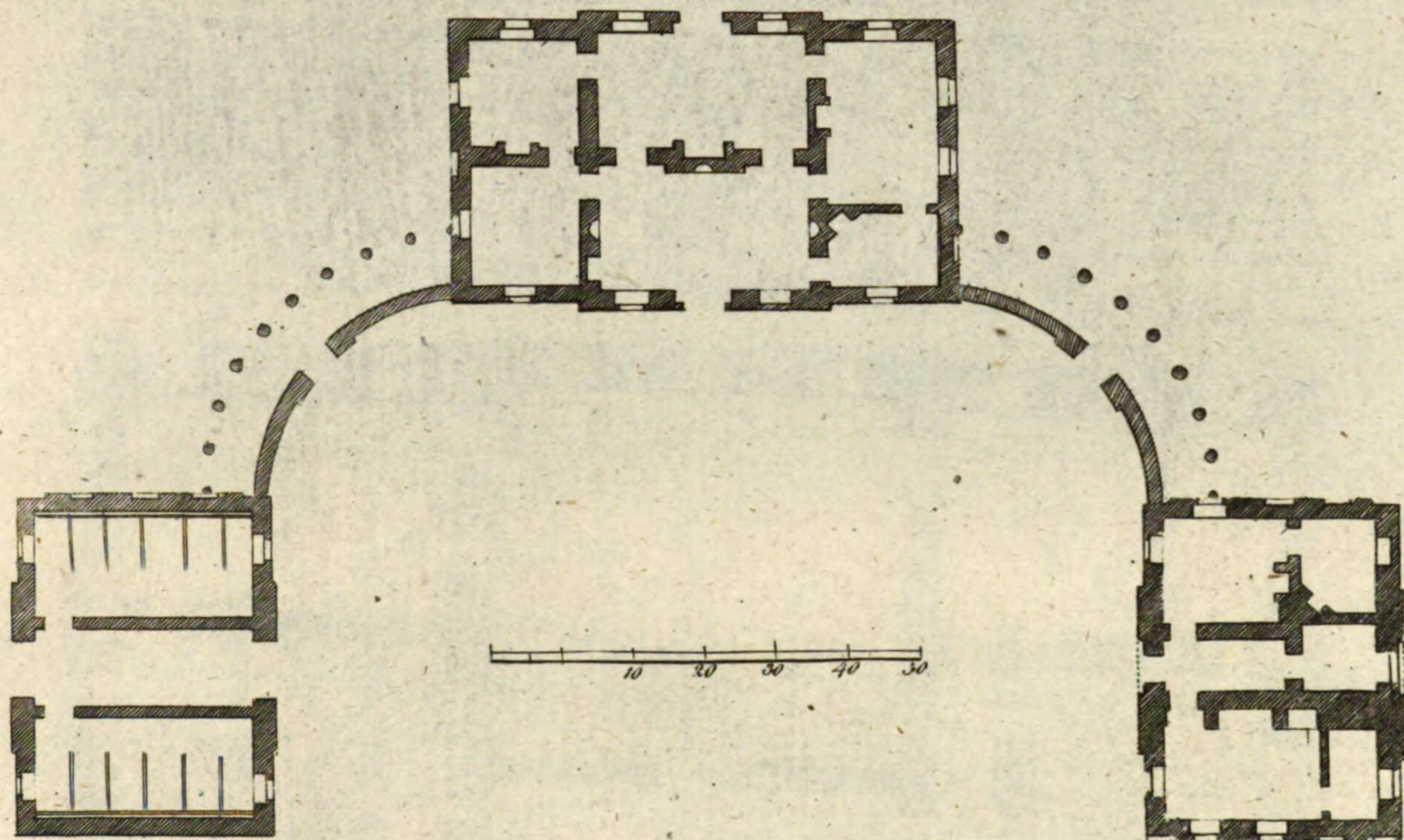
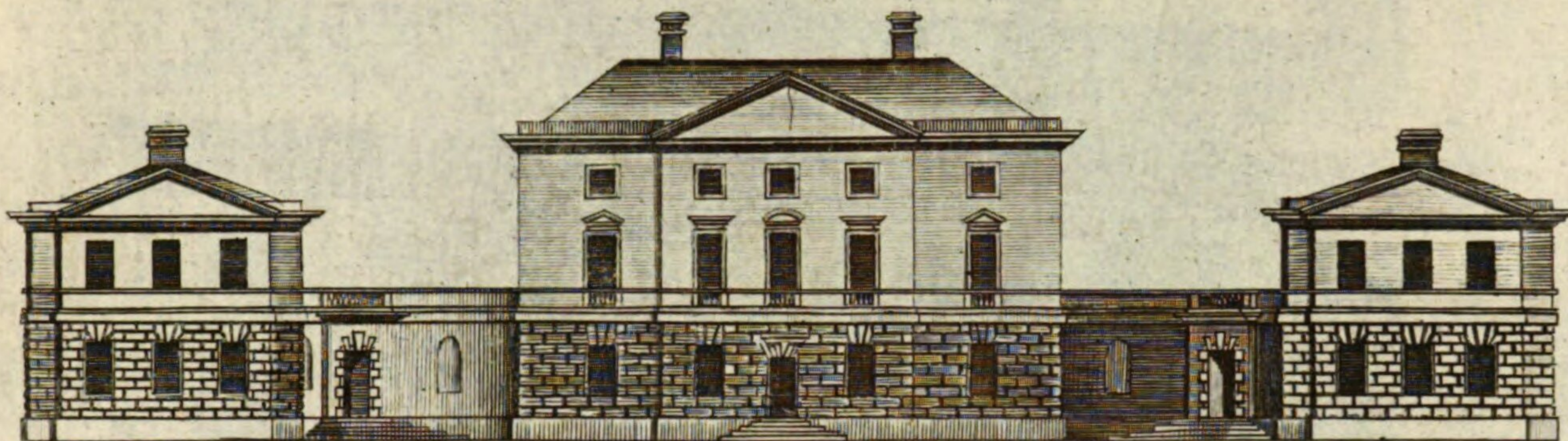
Another advantage of much more importance arises from the oval figure, which is, that the quantity of masonry of the arches is reduced in the same proportion as the radius of the arch is to its height. That is, if the radius is 36 feet, and the height of the arch 24, or three-fourths of the radius, the quantity of masonry of the arches is likewise reduced to three-fourths; which must lessen the expence of the bridge considerably. Notwithstanding these advantages, however, the latest experiments have determined segments of circles to be preferable to curves of any other kind: and of these the semicircle is undoubtedly the best, as pressing most perpendicularly on the piers.

When the height of the piers is about six feet, and the arches are circular, experience has shown, says Mr Belidor,

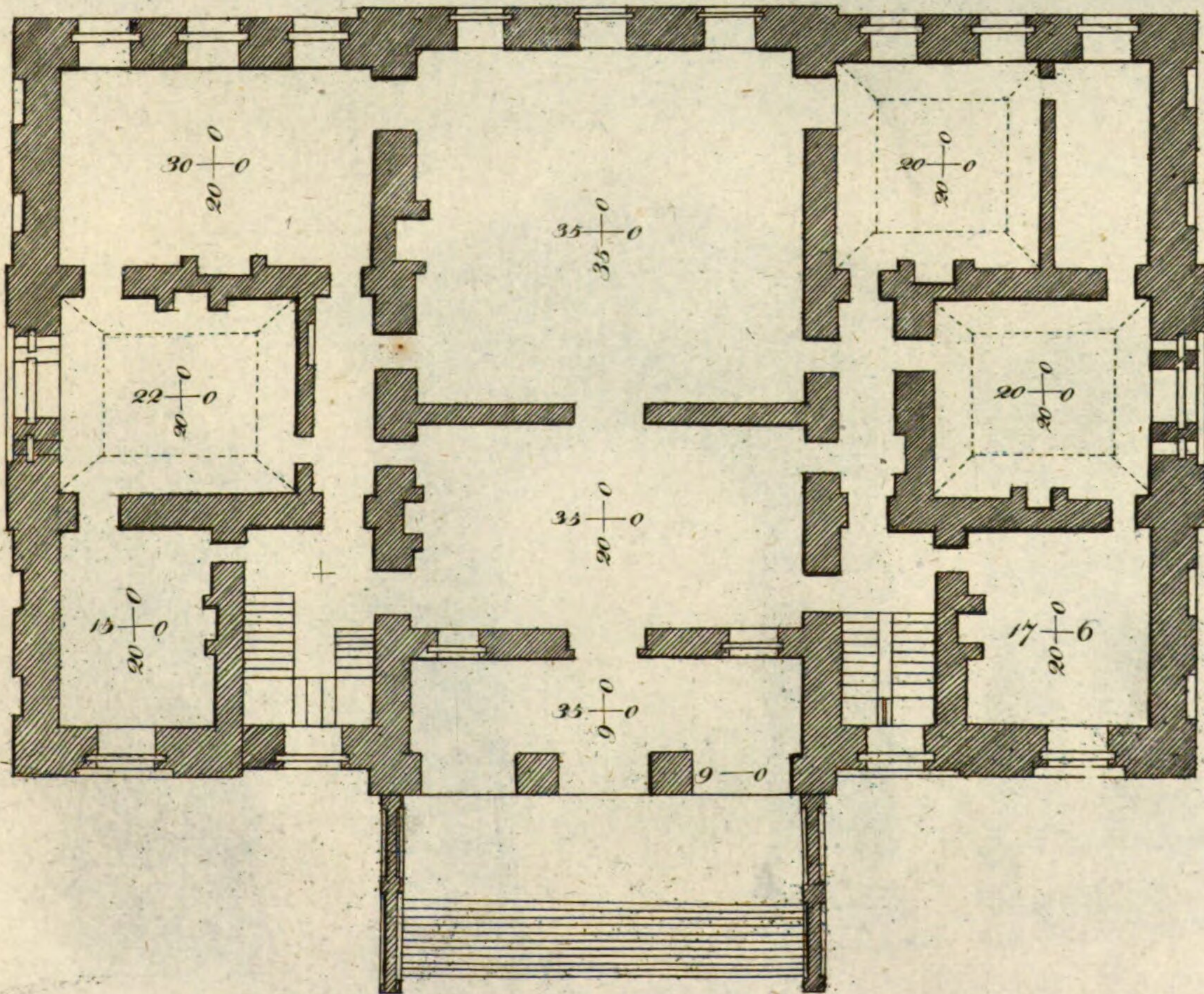
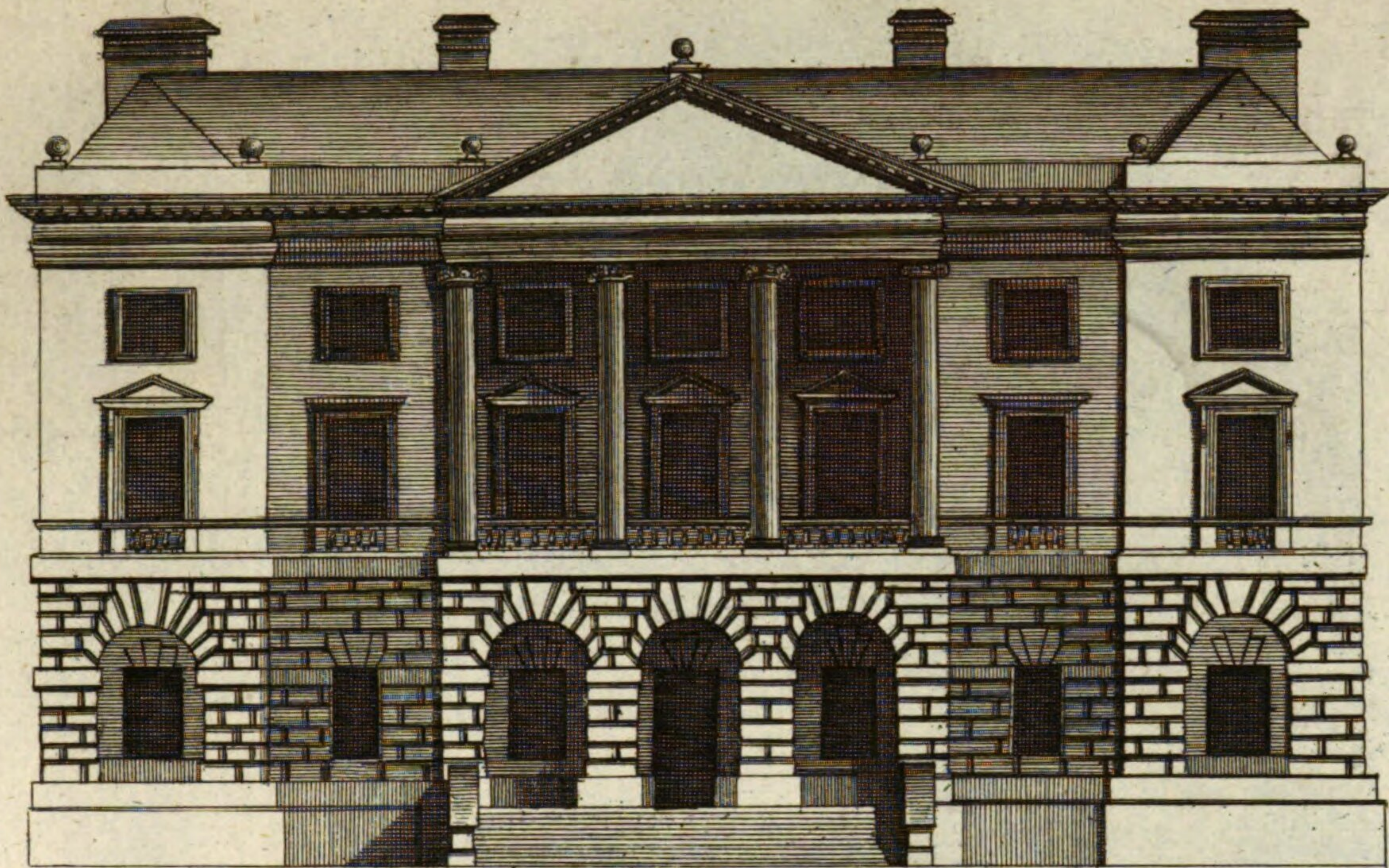
Practice.

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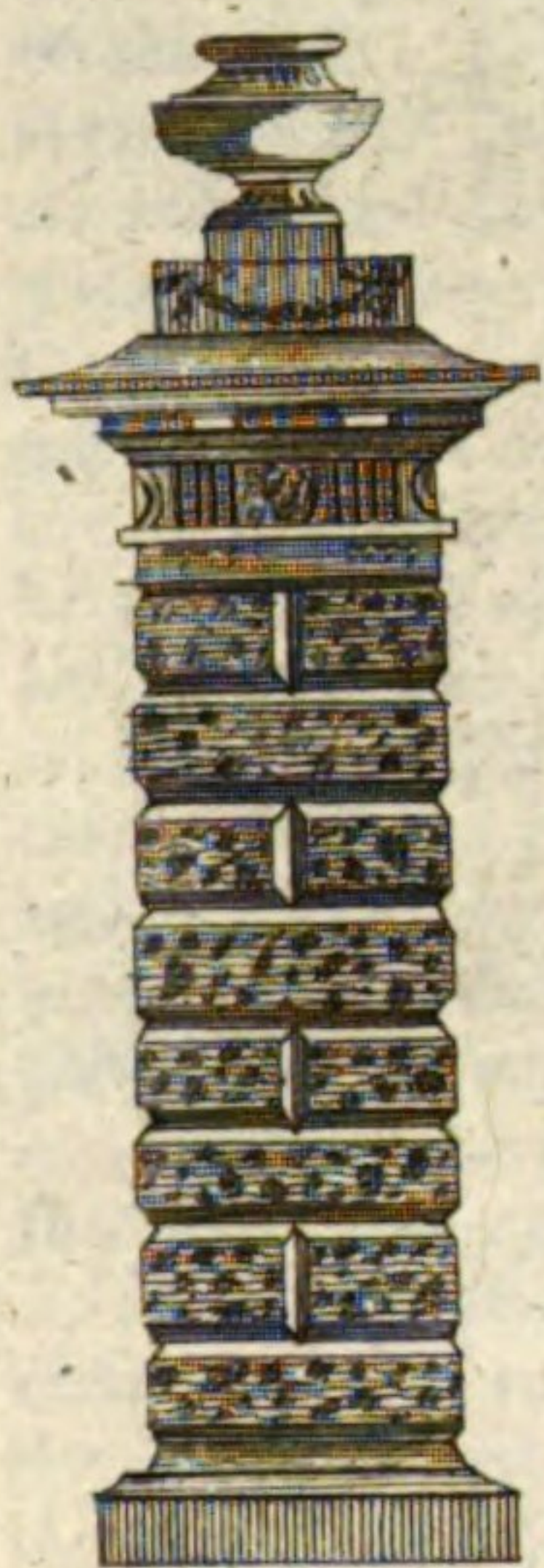
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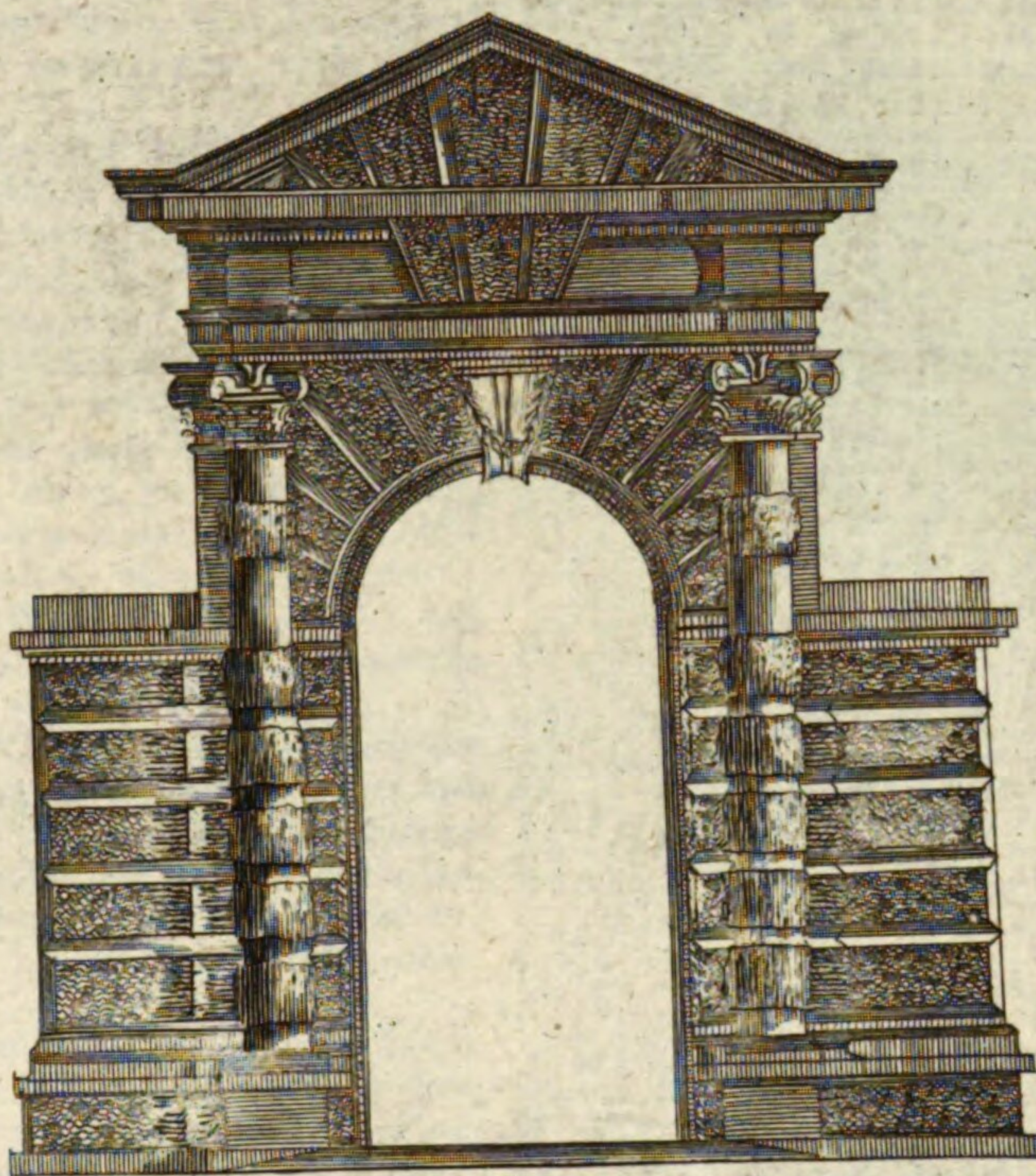
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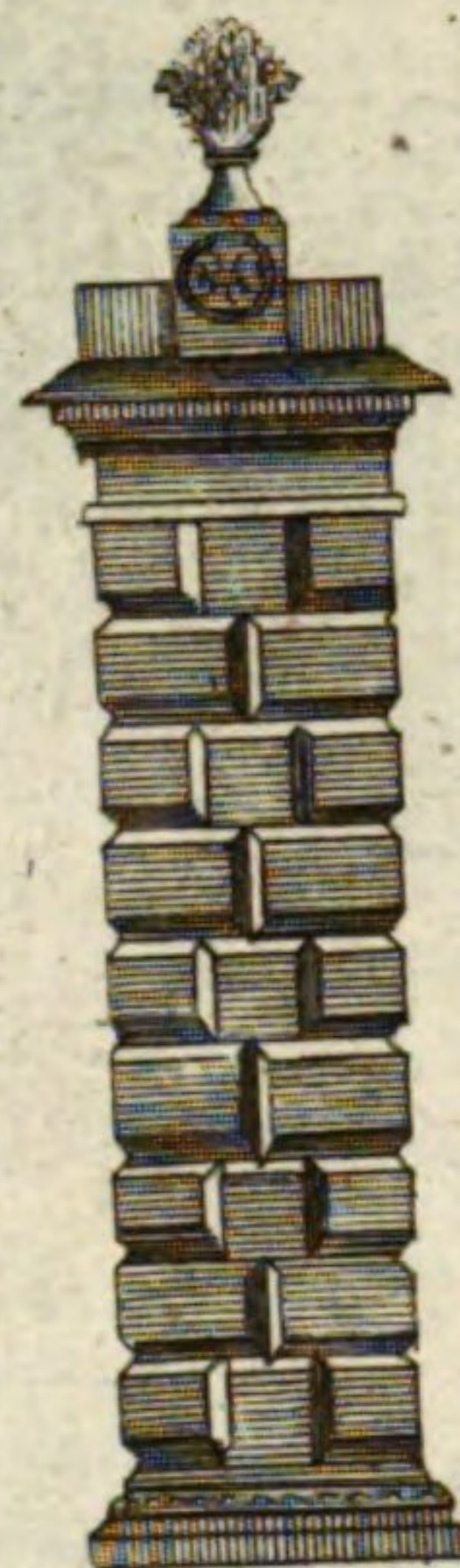
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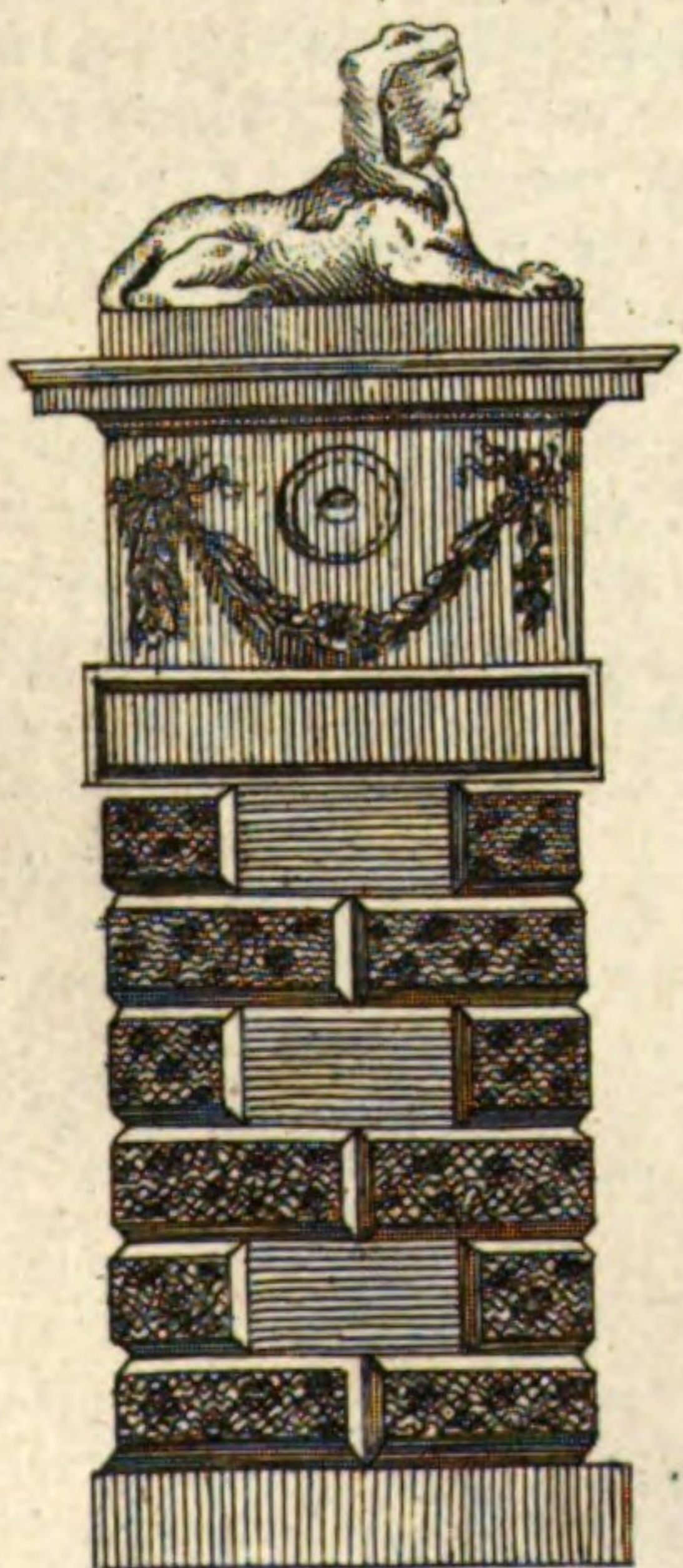
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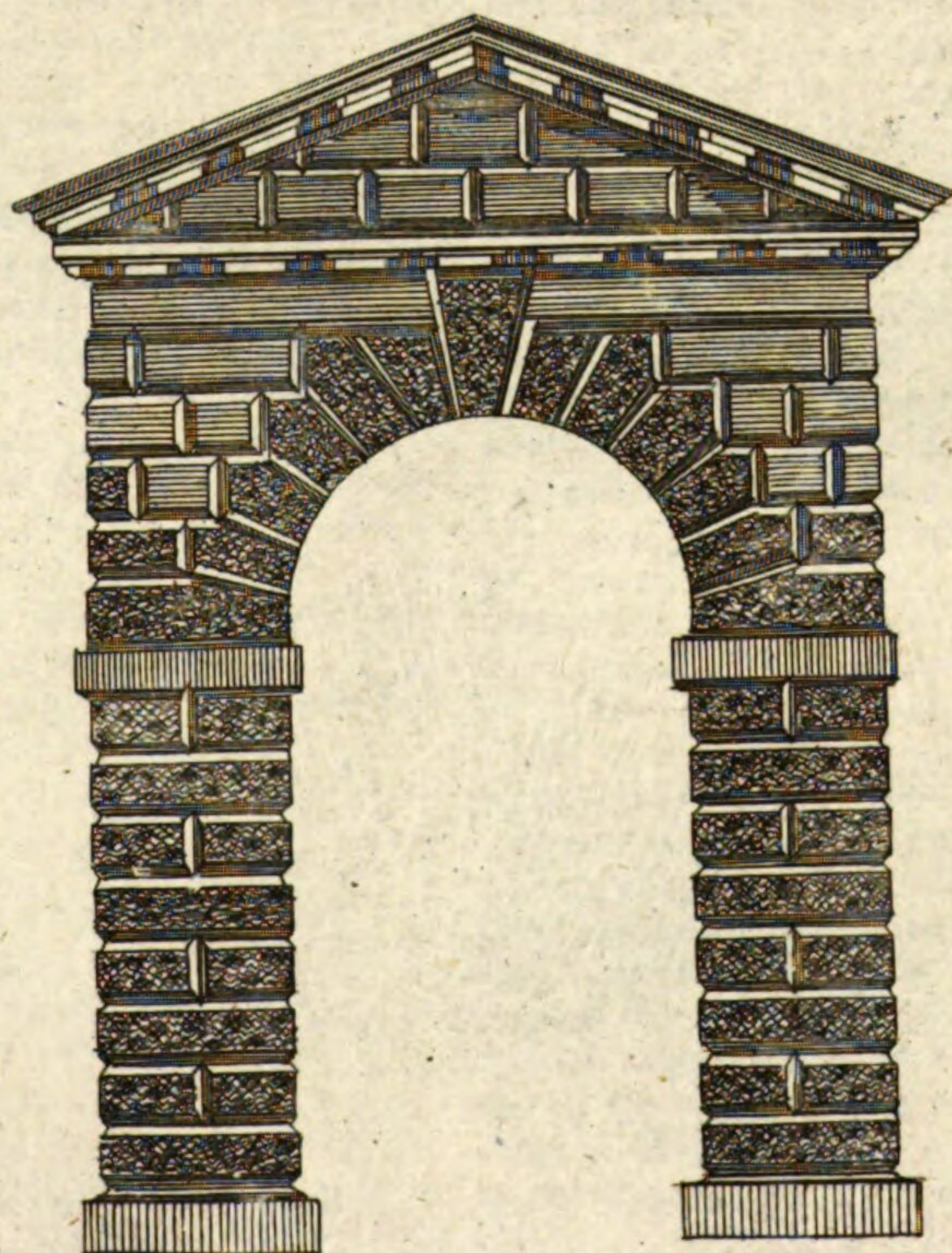
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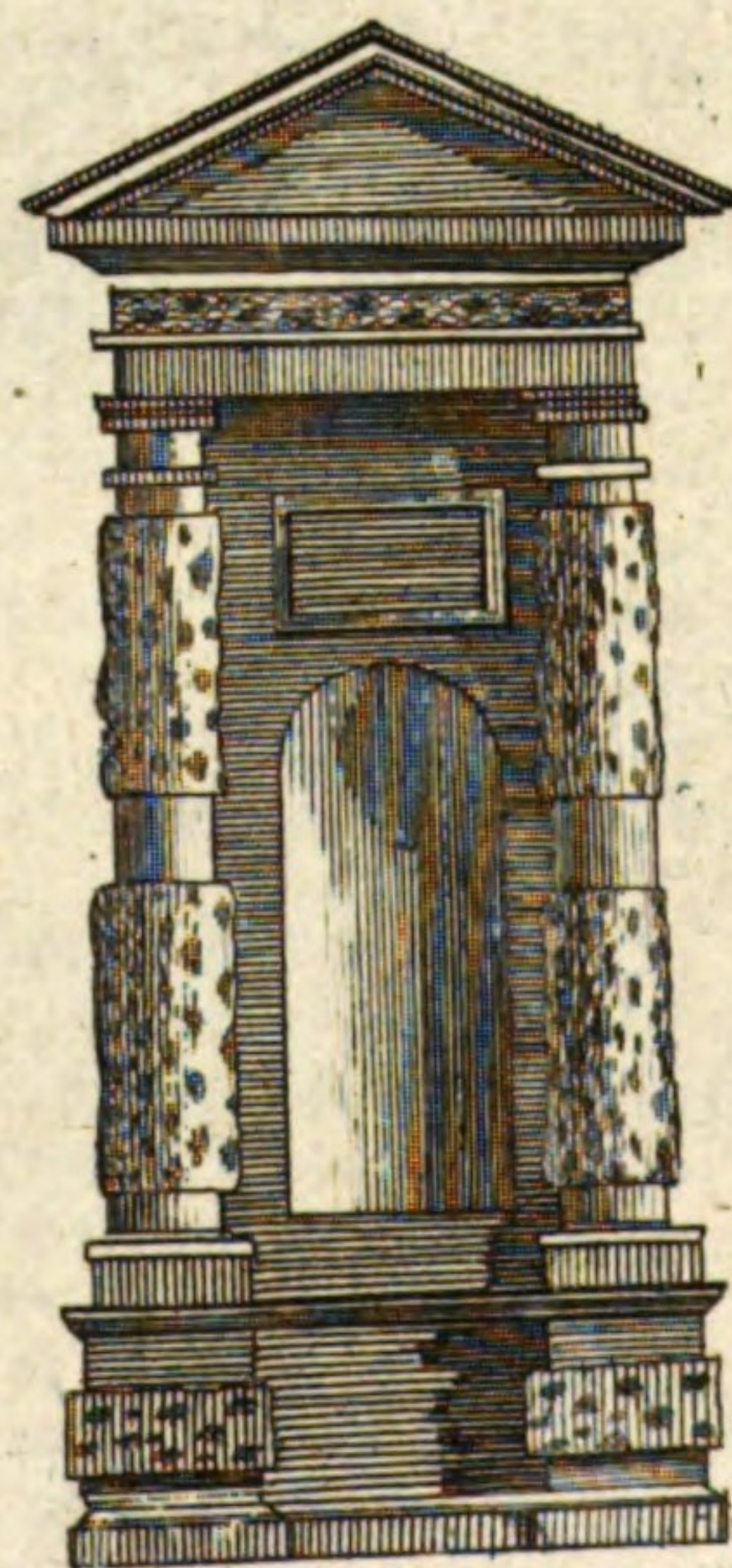
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5



6

Designs for Gates & Piers.

A. Bell Pin. Wal. Sculptor fecit.

¹²⁴ Practice. Belidor, that it is sufficient to make the thickness of the piers the sixth part of the width of the arch, and two feet more; that is, the thickness of the piers of an arch of 36 feet, ought to be 8 feet; those of an arch of 48 feet to be 10.

Thickness of the piers.

When the arches are of a great width, the thickness of the piers may be reduced to the sixth part of that width; but the depression of the two feet is not done at once; that is, in an arch of above 48 feet, 3 inches are taken off for every 6 feet of increase of the width of the arch. For instance, the thickness of the piers supporting an arch of 72 feet wide, should be 14 feet, according to the preceding rule; but by taking off 3 inches for every 6 feet, above an arch of 48 wide, the thickness of the piers is reduced to 13 feet; consequently, by following the same rule, the thickness of the piers supporting an arch of 16 fathoms wide, will be 16 feet; all the others above that width are the sixth part of the width.

After this, Mr Belidor gives a rule for finding the thickness of the piers which support elliptic arches, and makes them stronger than the former: the abutments he makes one sixth part more than the piers of the largest arch. But it is plain that these rules are insufficient, being merely guess-work, determined from some works that have been executed.

¹²⁵ Of the arch-stones.

The thickness of the arch-stones is not to be determined by theory, nor do those authors who have written on the subject agree amongst themselves. Mr Gautier, an experienced engineer, in his works, makes the length of the arch stones, of an arch 24 feet wide, two feet; of an arch 45, 60, 75, 90 wide, to be 3, 4, 5, 6, feet long respectively, when they are hard and durable, and something longer when they are of a soft nature; on the contrary, Mr Belidor says, they ought to be always one twenty-fourth part of the width of the arch, whether the stone be hard or soft; because, if they are soft, they weigh not so much.

But that the length of the arch-stones should be but a foot in an arch of 24 feet wide, 2, 3, 4, in arches of 48, 72, 96 feet, seems incredible; because the great weight of the arches would crush them to pieces, by the pressure against one another; and therefore Mr Gautier's rule appears preferable; as he made the length of the arch-stones to increase in a slower proportion, from 10 to 45 feet wide, that in those above that width, we imagine that the latter will be sufficient for all widths, whether they are great or little; therefore we shall suppose the length of the arch-stones of 30 feet in width to be two feet, and to increase one foot in 15; that is, 3 feet in an arch of 45 feet; 4, 5, 6, in an arch of 60, 75, and 90 feet; and so the rest in the same proportion.

Table containing the thickness of piers of bridges.

	6	9	12	15	18	21	24
20	4.574	4.918	5.165	5.350	5.492	5.610	5.698
25	5.490	5.913	6.216	6.455	6.645	6.801	7.930
30	6.385	6.816	7.225	7.513	7.746	7.939	8.102
35	7.258	7.786	8.200	8.532	8.807	9.037	9.233
40	8.404	8.691	9.148	9.523	9.835	10.101	10.328
45	8.965	9.579	10.077	10.489	10.837	11.136	11.394
50	9.805	10.454	10.987	11.435	11.817	12.146	12.434
55	10.640	11.245	11.882	12.364	13.019	13.149	13.218
60	11.400	12.110	12.718	13.281	13.723	14.109	14.314
65	12.265	13.025	13.648	14.185	14.654	15.082	15.433
70	13.114	13.869	14.517	15.049	15.573	16.011	16.400
75	14.000	14.705	15.336	15.965	16.480	16.940	17.354
80	14.747	15.542	16.234	16.842	17.381	17.864	18.298
85	15.513	16.328	17.041	17.674	18.237	18.742	19.198
90	16.373	17.201	17.929	18.578	19.157	19.679	20.152
95	17.184	17.826	18.772	19.438	20.036	20.577	21.068
100	17.991	18.848	19.610	20.293	20.908	21.466	21.976

The first horizontal line expresses the height of the piers in feet, from 6 to 24 feet, each increasing by 3; the first vertical column, the width of arches from 20 to 100 feet, for every five feet. ¹²⁶ Explanation of the table.

The other columns express the thickness of piers in feet and decimals, according to the respective height at the head of the column, and the width of the arch against it in the first column.

Thus, for example, let the width of the arch be 60 feet, and the height of the piers 12; then the number 12.718, under 12, and against 60, expresses the thickness of the piers, that is 12 feet and 8.6 inches: we must observe again, that the length of the key-stone is 2 feet in an arch of 30 feet wide; 3, 4, 5, 6, in an arch of 45, 60, 75, 90; that of 20 feet wide, 1 foot 4 inches; and the length of any other width is found by adding 4 inches for every 5 feet in width.

As this table contains the thicknesses of piers in respect to arches that are commonly used in practice, we imagined, that to carry it farther would be needless; because the difference between the thickness of the piers of any contiguous arches being but small, those between any two marked here, may be made equal to half the sum of the next below and above it: thus the thickness of the piers of an arch 52 or 53 feet wide is nearly equal to 10.222, half the sum of the thicknesses 9.805 and 10.64 of the arches 50 and 55 feet wide, when the height of the piers is 6 feet.

Rectangular piers are seldom used but in bridges over small rivers. In all others, they project the bridge by a triangular prism, which presents an edge to the stream, in order to divide the water more easily, and to prevent the ice from sheltering there, as well as vessels from running foul against them: that edge is terminated by the adjacent surfaces at right angles to each other at Westminster-bridge, and make an acute angle at the Pont Royal of about 60 degrees; but of late

Practice.

the French terminate this angle by two cylindric surfaces, whose bases are arcs of 60 degrees, in all their new bridges.

¹²⁸
Slope of the
bridge on
each side.

When the banks of the rivers are pretty high, the bridge is made quite level above, and all the arches of an equal width; but where they are low, or for the sake of navigation, a large arch is made in the middle of the stream, then the bridge is made higher in the middle than at the ends: in this case the slope must be made easy and gradual on both sides, so as to form above one continued curve line, otherwise it appears disagreeable to the eye. Mr Belidor will have the descent of that slope to be one-twenty-fourth part of the length; but this is undoubtedly too much, as one fiftieth part of the length is quite sufficient for the descent.

¹²⁹
Width, &c.

The width commonly allowed to small bridges is 30 feet: but in large ones near great towns, these 30 feet are allowed clear for horses and carriages, besides a banquet at each side for foot passengers of 6 to 9 feet each, raised about a foot above the common road; the parapet-walls on each side are about 18 inches thick, and 4 feet high; they generally project the bridge with a cornish underneath: sometimes ballustrades of stone or iron are placed upon the parapet, as at Westminster; but this is only practised where a bridge of a great length is made near the capital of a country.

The ends of bridges open from the middle of the two large arches with two wings, making an angle of 45 degrees with the rest, in order to make their entrance more free and easy: these wings are supported by the same arches of the bridge next to them, being continued in the manner of an arch, of which one pier is much longer than the other.

How the work is to be carried on.

¹³⁰
Methods of
laying the
foundation.

As the laying the foundation of the piers is the most difficult part of the whole work, it is necessary we should begin with an easy case, that is, when the depth of the water does not exceed 6 or 8 feet; and then proceed to those which may happen in a greater depth of water.

¹³¹
By batar-
deaux,

One of the abutments, with the adjacent piers, is inclosed by a dyke called *batardeau* by the French, of a sufficient width for the work, and room for the workmen. This *batardeau* is made by driving a double row of piles, whose distance is equal to the depth of water, and the piles in each row are 3 feet from each other; they are fastened together on the outside by bonds of 6 by 4 inches: this being done, frames of about 9 feet wide are placed on the inside to receive the boards which are to form the inclosure: the two uprights of these frames are two boards of an inch and half thick, sharpened below to be driven into the ground, and fastened together by double bonds, one below and the other above, each separated by the thickness of the uprights; these bonds serve to slide the boards between: after these frames have been driven into the ground as hard as can be, then the boards themselves are likewise driven in till they reach the firm ground underneath.

Between every two piles tie-beams are fastened to the bonds of the piles, to fasten the inside wall to the outside one; these tie-beams are let into the bonds and bolted

to the adjacent piles: this being done, the bottom is cleared from the loose sand and gravel, by a machine like those used by ballast heavers; and then well prepared clay is rammed into this coffer very tight and firm, to prevent the water from oozing through.

Sometimes these inclosures are made with piles only driven close to each other; at others, the piles are notched or dove-tailed one into the other; but the most usual method is to drive piles with grooves in them, 5 or 6 feet distant from each other, and boards are let down between them.

This being done, pumps and other engines are used to draw the water out of the inclosures, so as to be quite dry; then the foundation is dug, and the stones are laid with the usual precautions, observing to keep some of the engines always standing, in order to draw out the water that may ooze through the *batardeau*.

The foundation being cleared, and every thing ready to begin the work, a course of stones is laid; the outside all round with the largest stretchers and headers that can be had, and the inside filled with asblers well jointed, the whole laid in terrass mortar; the facings are cramp together, and set in lead; and some cramps are also used to fasten the facings with the inside. The same manner is to be observed throughout all the courses to the height of low-water mark; after which the facings alone are laid in terrass mortar, and the inside with the best of the common fort. When the foundation is carried to the height of low-water mark, or to the height where the arches begin, then the shaft or middle wall is to be carried up nearly to the height of the arches, and there left standing till all the piers are finished, in order that the masonry may be sufficiently dry and settled before the arches are begun.

As the piers end generally with an arch at each end, it is customary to lay the foundation in the same manner: which is not so well as to continue the base rectangular quite to the ends of the piers, and as high as low-water mark; both because the foundation becomes then so much broader, and also because the water will not be able to get under it: for when the current sets against a flat surface, it drives the sand and mud against it so as to cover it entirely; whereas if a sharp edge be presented to the stream, it carries every thing away, and exposes the foundation to the continual action of the water, which in course of time must destroy it.

After the intervals between the arches are filled up with stones laid in a regular manner without mortar, and the gravel is laid over them; two drains or gutters are to be made lengthwise over the bridge one on each side next to the foot-path, about six feet wide and a foot deep; which being filled with small pebble stones, serve to carry off the rain water that falls on the bridge, and to prevent its filtering through the joints of the arches, as often happens.

The former method of laying the foundation by means of *batardeaux* is very expensive, and often meets with great difficulties; for when the depth of water is 8 feet or more, it is scarcely possible to make the *batardeaux* so tight as to prevent the water from oozing through them; and in that case the number of engines required, as well as the hands to work them, become very extensive; and if part of the *batardeau* should break

Practice.

¹³²
Proper
form of the
base.

¹³³
Method of
building
with coffer,
as was prac-
tised at
Westmin-
ster bridge.

Practice break by some extraordinary wind or tide, the workmen would be exposed to very great danger.

The next and best method therefore is to build with coffers, when it is practicable, such as were used at Westminster bridge. Here the height of water was 6 feet at a medium when lowest, and the tide rose about 10 feet at a medium also: so that the greatest depth of water was about 16 feet. At the place where one of the piers of the middle or great arch was to be, the workmen began to drive piles of about 13 or 14 inches square, and 34 feet long, shod with iron, so as to enter into the gravel with more ease, and hooped above to prevent their splitting in driving them: these piles were driven as deep as could be done, which was 13 or 14 feet below the surface of the bed of the river, and 7 feet distant from each other, parallel to the short ends of the pier, and at about 30 feet distant from them: the number of these piles was 34, and their intent to prevent any vessels or barges from approaching the work; and in order to hinder boats from passing between them, booms were placed so as to rise and fall with the water.

This being done, the ballast-men began to dig the foundation under the water of about 6 feet deep, and 5 wider all round than the intended coffer was to be, with an easy slope to prevent the ground from falling in: in order to prevent the current from washing the sand into the pit, short grooved piles were driven before the two ends and part of the sides, not above 4 feet higher than low-water mark, and about 15 feet distant from the coffer: between these piles rows of boards were let into the grooves down to the bed of the river, and fixed there.

The bottom of the coffer was made of a strong grate consisting of two rows of large timbers, the one longwise and the other crosswise, bolted together with wooden trunnels, ten feet wider than the intended foundation. The sides of the coffer were made with fir timbers laid horizontally close one over another, pinned with oaken trunnels, and framed together at the corners, excepting at the two salient angles, where they were secured with proper irons, so that the one half might be loosened from the other if it should be thought necessary; these sides were lined on the inside as well as on the outside with three-inch planks placed vertically; the thickness of those sides was 18 inches at the bottom, reduced to 15 above, and they were 16 feet high; besides, knee-timbers were bolted at the angles, in order to secure them in the strongest manner. The sides were fastened to the bottom by 28 pieces of timber on the outside, and 18 within, called *straps*, about 8 inches broad, and 3 or 4 inches thick, reaching and lapping over the ends of the sides: the lower part of these straps had one side cut dove-tail fashion, in order to fit the mortises made near the edge of the bottom to receive them, and were kept in their places by iron wedges; which being drawn out when the sides were to be taken away, gave liberty to clear the straps from the mortises.

Before the coffer was launched, the foundation was examined, in order to know whether it was level; for which purpose several gauges were made, each of which consisted of a stone of about 15 inches square and three thick, with a wooden pole in the middle of about 18 feet long. The foundation being levelled and the cof-

fer fixed directly over the place with cables fastened to the adjacent piles, the masons laid the first course of the stones for the foundation within it; which being finished, a sluice made in the side was opened near the time of low-water: on which the coffer sunk to the bottom; and if it did not set level, the sluice was shut, and the water pumped out, so as to make it float till such time as the foundation was levelled; then the masons cramp the stones of the first course, and laid a second; which being likewise cramp, a third course was laid: then the sluice being opened again, proper care was taken that the coffer should settle in its due place. The stone-work being thus raised to within two feet of the common low-water mark, about two hours before low-water the sluice was shut, and the water pumped out so far as that the masons could lay the next course of stone, which they continued to do till the water was risen so high as to make it unsafe to proceed any farther: then they left off the work, and opened the sluice to let in the water. Thus they continued to work night and day at low-water till they had carried their work some feet higher than the low-water mark: after this, the sides of the coffer were loosened from the bottom, which made them float; and then were carried ashore to be fixed to another bottom, in order to serve for the next pier.

It must be observed, that the coffer being no higher than 16 feet, which is equal to the greatest depth of water, and the foundation being 6 feet under the bed of the river; the coffer was therefore 6 feet under water when the tide was in, but being loaded with three courses of stones, and well secured with ropes fastened to the piles, it could not move from its place. By making it no higher, much labour and expence were saved; yet it answered the intent full as well as if it had been high enough to reach above the highest flood.

The pier being thus carried on above low-water mark, the masons finished the rest of it during the intervals of the tides in the usual way; and after all the piers and abutments were finished in a like manner, the arches were begun and completed as mentioned before: the whole bridge was built in about seven years, without any accidents happening either in the work or to the workmen, which is seldom the case in works of this nature.

It may be observed, that all the piers were built with solid Portland stone, some of which weighed four tons. The arch-stones were likewise of the same sort: but the rest of the masonry was finished with Kentish rag-stones; and the paths for foot passengers were paved with *purbec*, which is the hardest stone to be had in England, excepting Plymouth marble.

This method of building bridges is certainly the easiest and cheapest that can be thought of, but cannot be used in many cases: when the foundation is so bad as not to be depended upon without being piled, or the depth of water is very great, with a strong current and no tide, it cannot then be practised. For if piles are to be used, it will be next to impossible to cut them off in the same level five or six feet below the bed of the river, notwithstanding that saws have been invented for that purpose: because if they are cut off separately, it will be a hard matter to do it so nicely that the one shall not exceed the other in height; and if this is not done, the grating or bottom of the coffer will not be equally

Practice.

¹³⁴ Materials employed.

¹³⁵ This method sometimes impracticable.

sup.

supported, whereby the foundation becomes precarious; neither can they be cut off altogether; for piles are to be driven as far as the bottom of the coffer extends, which at Westminster bridge was 27 feet; the saw must have three feet play, which makes the total length of the saw 30 feet; now, if either the water is deeper than it is there, or the arches are wider, the saw must still be longer: so that this method is impracticable in any such cases.

In a great depth of water that has a strong current and no tide, the coffers must reach above the water, which makes them very expensive, and unwieldy to manage, as well as very difficult to be secured in their places, and kept steady: so that there is no probability of using them in such a case.

136
Russian method.

In some cases, when there is a great depth of water and the bed of the river is tolerably level, or where it can be made so by any contrivance, a very strong frame of timber about four times as large as the base of the piers may be let down with stones upon it round the edges to make it sink: after fixing it level, piles must be driven about it to keep it in its place; and then the foundation may be laid in coffers as before, which are to be kept steady by means of ropes tied to the piles.

This method has frequently been used in Russia; and though the bed of the river is not very solid, yet such a grate, when once well settled with the weight of the pier upon it, will be as firm as if piles had been driven under the foundation; but to prevent the water from gulling under the foundation, and to secure it against all accidents, a row of dove-tail piles must be driven quite round the grating: this precaution being taken, the foundation will be as secure as any that can be made.

137
French method.

The French engineers make use of another method in raising the foundations of masonry under water; which is, to drive a row of piles round the intended place, nearer to, or farther from, each other, according as the water is more deep or shallow: these piles being strongly bound together in several places with horizontal tie-beams, serve to support a row of dove-tail piles driven within them: when this is done, and all well secured according to the nature of the situation and circumstances, they dig the foundation by means of a machine with scoops, invented for that purpose, until they come to a solid bed of gravel or clay; or if the bed of the river is of a soft consistence to a great depth, it is dug only to about six feet, and a grate of timber is laid upon it, which is well secured with piles driven into the opposite corners of each square, not minding whether they exceed the upper surface of the grate much or little.

When the foundation is thus prepared, they make a kind of mortar called *beton*, which consists of twelve parts of pozolano or Dutch terrass, six of good sand, nine of unslaked lime, the best that can be had, thirteen of stone splinters not exceeding the bigness of an egg, and three parts of tile-dust, or cinders, or else scales of iron out of a forge: this being well worked together must be left standing for about 24 hours, or till it becomes so hard as not to be separated without a pick-axe.

This mortar being thus prepared, they throw into the coffer a bed of rubble-stone, not very large, and spread them all over the bottom as nearly level as they

can; then they sink a box full of this hard mortar broken into pieces, till it come within a little of the bottom; the box is so contrived as to be overfet or turned upside down at any depth; which being done, the pieces of mortar soften, and so fill up the vacant spaces between the stones; by these means they sink as much of it as will form a bed of about 12 inches deep all over: then they throw in another bed of stone, and continue alternately to throw one of mortar and one of stone till the work approaches near the surface of the water where it is levelled, and then the rest is finished with stones in the usual manner.

Mr Belidor says, in the second part of his *Hydraulics*, vol. ii. p. 188, that Mr Millet de Montville having filled a coffer containing 27 cubic feet, with masonry made of this mortar, and sunk it into the sea, it was there left standing for two months, and when it was taken out again it was harder than stone itself.

We have hitherto mentioned such situations only where the ground is of a soft nature: but where it is rocky and uneven, all the former methods prove ineffectual; nor indeed has there yet been any one proposed which can be always used upon such occasions, especially in a great depth of water. When the water is not so deep but that the unevenness of the rock can be perceived by the eye, piles strongly shod with iron may be raised and let-fall down, by means of a machine, upon the higher parts, so as to break them off piece by piece, till the foundation is tolerably even, especially when the rock is not very hard; which being done either this or in any other way that can be thought of, a coffer is made without any bottom, which is let down and well secured, so as not to move from its place: to make it sink, heavy stones should be fixed on the outside; then strong mortar and stones must be thrown into it; and if the foundation is once brought to a level, large hewn stones may be let down so as to lie flat and even: by these means the work may be carried on quite up to the surface of the water. But when the water is so deep, or the rock so hard as not to be levelled, the foundation must be founded, so to get nearly the risings and fallings; then the lower part of the coffer must be cut nearly in the same manner, and the rest finished as before. It must however be observed, that we suppose a possibility of sinking a coffer; but where this cannot be done, no method that we know of will answer.

Among the aquatic buildings of the ancients none appears to have been more magnificent than Trajan's bridge. Dion Cassius gives the following account of it: "Trajan built a bridge over the Danube, which in truth one cannot sufficiently admire; for though all the works of Trajan are very magnificent, yet this far exceeds all the others: the piers were 20 in number, of square stone: each of them 150 feet high above the foundation, 60 feet in breadth, and distant from one another 170 feet. Though the expence of this work must have been exceeding great, yet it becomes more extraordinary by the river's being very rapid, and its bottom of a soft nature: where the bridge was built, was the narrowest part of the river thereabout, for in most others it is double or treble this breadth; and although on this account it became so much the deeper and the more rigid, yet no other place was so suitable for this undertaking. The arches were afterwards broken

138
Impossibility of building bridges in some cases.

139
Trajan's bridge over the Danube described.

Practice. broken down by Adrian; but the piers are still remaining, which seem as it were to testify that there is nothing which human ingenuity is not able to effect." The whole length then of this bridge was 1590 yards; some authors add, that it was built in one summer, and that Appollodorus of Damascus was the architect, who left behind him a description of this great work.

140
Wooden
bridges.

Where stone bridges cannot be erected on account of the expence, very strong and durable ones may be constructed of wood: in which case they ought to be so framed, as that all the parts may press upon one another like the arch of a stone bridge; and thus, instead of being weakened by great weights passing over them, they will become the stronger. How this is to be accomplished, will be better understood from the figure at bottom of Plate L. which represents a wooden bridge constructed after this manner, than it can be by any description.

2. Of HARBOURS.

141
Situation
proper for
harbours.

IN these, the first thing to be considered is the situation; which may be some large creek or basin of water, in or near the place where the harbour is intended to be made, or at the entrance of a large river, or near the sea: for a harbour should never be dug entirely out of dry land, unless upon some extraordinary occasions, where it is impossible to do otherwise, and yet a harbour is absolutely necessary. When a proper place is found, before it is fixed upon, it must be considered whether ships can lie there safe in stormy weather, especially when those winds blow which are most dangerous upon that coast; whether there be any hills, rising ground, or high buildings, that will cover it; in these cases, the situation is very proper: but if there be nothing already that will cover the ships, it must be observed whether any covering can be made at a moderate expence, otherwise it would be useless to build a harbour there.

The next thing to be considered is, whether there be a sufficient depth of water for large ships to enter with safety, and lie there without touching the ground; and if not, whether the entrance and inside might not be made deeper at a moderate expence: or, in case a sufficient depth of water is not to be had for large ships, whether the harbour would not be useful for small merchantmen; for such a one is often of great advantage, when situated upon a coast much frequented by small coasting vessels.

The form of the harbour must be determined in such a manner, that the ships which come in when it is stormy weather may lie safe, and so as there may be sufficient room for as many as pass that way: the depths of water where the piers are to be built must be taken at every 10, 15, or 20 feet distance, and marked upon piles driven here and there, in order that the workmen may be directed in laying the foundation.

142
Materials.

This being done, it must be considered what kind of materials are to be used, whether stone, brick, or wood. When stones are to be had at a moderate price, they ought to be preferred, because the work will be much stronger, more lasting, and need fewer repairs, than if made with any other materials: but when stones are scarce, and the expence becomes greater than what is allowed for building the harbour, the foundation may

be made of stone as high as low-water mark, and the rest finished with brick. If this manner of building should still be too expensive, wood must be used; that is, piles are driven as close as is thought necessary; which being fastened together by cross-bars, and covered with strong oaken planks, form a kind of coffer, which is filled with all kinds of stones, chalk, and shingles.

The manner of laying the foundation in different depths of water, and in various soils, requires particular methods to be followed. When the water is very deep, the French throw in a great quantity of stones at random, so as to form a much larger base than would be required upon dry land; this they continue to within 3 or 4 feet of the surface of the water, where they lay the stones in a regular manner till the foundation is raised above the water: they then lay a great weight of stones upon it, and let it stand during the winter to settle; as likewise to see whether it is firm, and resists the force of the waves and winds; after that, they finish the superstructure with large stones in the usual manner.

143
French method of
building.

As this method requires a great quantity of stones, it can be practised only in places where stones are in plenty; and therefore the following one is much preferable. A coffer is made with dove-tail piles of about 30 yards long, and as wide as the thickness of the foundation is to be; then the ground is dug and levelled, and the wall is built with the best mortar.

144

As soon as the mortar is tolerably dry, those piles at the end of the wall are drawn out, the side-rows are continued to about 30 yards farther, and the end inclosed; then the foundation is cleared, and the stones laid as before. But it must be observed, that the end of the foundation finished is left rough, in order that the part next to it may incorporate with it in a proper manner; but if it is not very dry, it will incline that way of itself, and bind with the mortar that is thrown in next to it: this method is continued till the whole pier is entirely finished.

It must likewise be observed, that the piers are not made of one continued solid wall; because in deep water it would be too expensive: for which reason, two walls are built parallel to each other, and the interval between them is filled up with shingle, chalk, and stone. As these walls are in danger of being thrust out or overset, by the corps in the middle, together with the great weight laid at times on the pier, they are tied or bound together by cross-walls at every 30 or 40 yards distance, by which they support each other in a firm and strong manner.

In a country where there is a great plenty of stones, piles may be driven in as deep as they will go, at about two or three feet distance; and when the foundation is sunk and levelled, large stones may be let down, which will bed themselves: but care must be taken to lay them close, and so as to have no two joints over each other; and when the wall is come within reach, the stones must be cramp together.

Another method practised, is to build in coffers much after the same manner as has been done in building the piers of Westminster bridge; but as in this case the ends of the coffers are left in the wall, and prevent their joining so well as to be water-tight, the water that penetrates through and enters into the corps may occasion

145
Another method
with coffers.

Practice.

tion the wall to burst and to tumble down. Another inconveniency arising from this manner of building is, that as there are but few places without worms, which will destroy wood where-ever they can find it; by their means the water is let into the pier, and consequently makes the work liable to the same accident as has been mentioned above.

146
Russian method.

To prevent these inconveniences, the best method is to take the wood away, and joggle the ends of the walls together with large stones, pouring terrass-mortar into the joints; when this is done, the water between the two walls may be pumpt out, and the void space filled up with stone and shingle as usual: or if these joggles cannot be made water-tight, some dove-tail piles must be driven at each end as close to the wall as can be done, and a strong sail-cloth put on the outside of them, which, when the water is pumpt out, will stick so close to the piles and wall, that no water can come in. This method is commonly used in Russia.

147
Thickness of piers.

The thickness of a pier depends on two considerations: it ought to be both such as may be able to resist the shock of the waves in stormy weather; and also to be of a sufficient breadth above, that ships may be laden or unladen whenever it is thought necessary. Now, because the specific gravity of sea-water is about one half that of brick, and as 2 to 5 in comparison of stone; and since the pressure of stagnated water against any surface is equal to the weight of a prism of water whose altitude is the length of that surface, and whose base is a right angled isosceles triangle, each of the equal sides being equal to the depth of the water; therefore a pier built with bricks, whose thickness is equal to the depth of the water, will weigh about four times as much as the pressure of the water against it; and one stone of the same breadth, about six times and a quarter as much. Now this is not the force to be considered, since this pressure is the same within as without the pier: but it is that force with which the waves strike against the piers, and that depends on the weight and velocity of the waves, which can hardly be determined; because they vary according to the different depths of water, the distance from the shore, and according to the tides, winds, and other causes. Consequently the proper thickness of the piers cannot be determined by any other means than by experience.

Practitioners suppose, that if the thickness of a pier is equal to the depth of the water, it is sufficient; but for a greater security they allow 2, 3, or 4 feet more. This might probably do, if piers were built with solid stones cramp together; but as this is hardly ever the case, and on the contrary, as the inside is filled up with shingle, chalk, or other loose materials, their rule is not to be depended upon; besides it makes the space above too narrow for lading and unlading the ships, unless in a great depth of water; so that it does not appear that their method can be followed, excepting in a very few cases where the water has but very little motion.

When stone can be had, no other materials should be used, because they being of a larger bulk than brick, will better resist the waves by their own weight, till such time as the mortar is grown hard; for after this is effected, brick will resist better against the action of sea-water than soft stones.

The wall must be built with terrass mortar from the bottom to the height of low-water mark, and the rest finished with cinder or tile-dust mortar, which has been found sufficiently good in those places where the wall is wet and dry alternately. The upper part of the pier should be paved with flat hewn stones laid in strong mortar, in order to prevent any water from penetrating into it: iron rings ought also to be fixed here and there at proper distances, to fasten the ships, and prevent them from striking against the pier when agitated by the waves.

Wooden fenders or piles should be driven at the inside close to the wall, and cramp to it with iron, to prevent the ships from touching them, and from being worn by the continual motion. Where the sea breaks against the piers with great violence, breakers should be made at proper distances; that is, two rows of piles are driven nearly at right angles to the piers for the length of about 12 or 15 feet, and at about 8 or 10 feet distant from each other; and then another to join the two former: these piles being covered with planks, and the inside being filled with shingle and rubble-stones, then the top is paved with stones of about a foot in length, set long-wise to prevent the waves from tearing them up. This precaution is absolutely necessary where the water rushes in very strongly.

Practice.

A R C

Architec-
ture
||
Architri-
clinus.

Military ARCHITECTURE, the same with what is otherwise called *fortification*. See FORTIFICATION.

Naval ARCHITECTURE, the art of building ships. See SHIP-BUILDING.

ARCHITRAVE, in architecture, that part of a column which lies immediately upon the capital, being the lowest member of the entablature. See Plate XXXV.

Over a chimney, this member is called the *mantle-piece*; and over doors or windows, the *hyperthyron*.

ARCHITRICLINUS, in antiquity, the master or director of a feast, charged with the order and economy of it, the covering and uncovering of the tables, the command of the servants, and the like.

The architriclinus was sometimes called *servus tri-*

A R C

cliniarcha, and by the Greeks προγευστης, i. e. *prægu-* Archivault,
stator, or *fore-taster*. Potter also takes the architri- Archive.
clinus for the same with the sympsiarcha.

ARCHIVALT, in architecture, implies the inner contour of an arch, or a band adorned with mouldings, running over the faces of the arch-stones, and bearing upon the imposts. It has only a single face in the Tuscan order, two faces crowned in the Doric and Ionic, and the same mouldings as the architrave in the Corinthian and Composite.

ARCHIVE, or ARCHIVES, a chamber or apartment wherein the records, charters, and other papers and evidences, of a state, house, or community, are preserved, to be consulted occasionally.

We say, the *archives* of a college, of a monastery, &c.

Archivist
||
Archons.

&c. The archives of ancient Rome were in the temple of Saturn; the archives of the court of chancery are in the rolls office.

ARCHIVIST, ARCHIVISTA, a keeper of an archive.

Under the emperors, the archivist was an officer of great dignity, held equal to the proconsuls, vested with the quality of a count, styled *clarissimus*, and exempted from all public offices and taxes. Among the ancient Greeks and Persians, the trust was committed to none but men of the first rank; among the Franks, the clergy being the only men of letters, kept the office among themselves.—Since the erection of the electoral college, the Archbishop of Mentz has had the direction of the archives of the empire.

ARCHMARSHAL, the grand marshal of the empire, a dignity belonging to the elector of Saxony.

• See the
article *At-
tica*.

ARCHONS, in Grecian antiquity, were magistrates appointed after the death of Codrus*. They were chosen from the most illustrious families till the times of Aristides, who got a law passed, by which it was enacted, that, in electing these magistrates, less regard should be paid to birth than to merit.

The tribunal of the archons was composed of nine officers. The first was properly the *archon*; by whose name the year of his administration was distinguished. The title of the second was *king*; that of the third, *polemarchus*; to these were added six *thesmothetæ*. These magistrates, elected by the scrutiny of beans, were obliged to prove, before their respective tribes, that they had sprung, both in their father's and their mother's side, for three descents, from citizens of Athens. They were likewise to prove that they were attached to the worship of Apollo, the tutelary god of their country; that they had in their house an altar consecrated to Apollo; and that they had been respectfully obedient to their parents; an important and sacred part of their character, which promised that they would be faithful servants to their country. They were likewise to prove, that they had served in a military capacity the number of years which the republic required of every citizen; and this qualification gave the state experienced officers; for they were not allowed to quit the army till they were 40 years old. Their fortune too, of which they were to inform those before whom they were examined, was a warrant for their fidelity.

After the commissioners, who were appointed to inquire into their character and other requisites, had made a report of them, they were then to swear that they would maintain the laws; which obligation if they neglected, they engaged to send to Delphi a statue of the weight of their bodies. According to a law of Solon, if an archon got drunk, he was condemned to pay a heavy fine, and sometimes even punished with death. Such magistrates as the Athenian archons were well intitled to respect. Hence it was eternal infamy to insult them; and hence Demosthenes observed, that to treat the thesmothetæ with disrespect, was to show disrespect to the republic.

Another qualification indispensably required of the second officer of this tribunal, who was called the *king*, was, that he had married the daughter of an Athenian citizen, and that he had espoused her a virgin. This was exacted of him, says Demosthenes, because part of

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his duty was to sacrifice to the gods jointly with his wife, who, instead of appeasing, would have irritated them, if she had not possessed both these honours.

The enquiry into the private title of the nine archons was very severe; and this attention was the more necessary, as they had a right to take a seat in the Areopagus, after they had quitted their office, and given an account of their administration.

When any obscurity occurred in the laws relative to religion and the worship of the gods, the interpretation was submitted to the tribunal of the archons.

Aristotle observes, that Solon, whose aim was to make his people happy, and who found their government in his time aristocratical, by the election of the nine archons, who were annual magistrates, tempered their power, by establishing the privilege of appealing from them to the people, called by lot to give their suffrage, after having taken the oath of the Heliastæ, in a place near the Panathenæum, where Hippias had formerly calmed a sedition of the people, and bound them to peace by an oath.

The archons were the principal officers, not only in civil, but likewise in sacred matters, and especially in the mysteries of Bacchus. The archons, however, who were surnamed *eponymi*, were chiefly employed in civil affairs; yet they presided at the great feasts, and held the first rank there. Hence they are sometimes styled *priests*.

ARCHON is also applied by some authors to divers officers, both civil and religious, under the eastern or Greek empire. Thus bishops are sometimes called *archontes*; and the same may be said of the lords of the emperor's court. We also read of the *archon of the antimensia*, *archon of archons*, *grand archon*, *archon of churches*, *archon of the gospel*, *archon of the walls*, &c.

ARCHONTICI, in church-history, a branch of Valentinians, who maintained that the world was not created by God, but by angels called *Archontes*.

ARCHPRIEST, ARCHPRESBYTER, a priest or presbyter established in some dioceses, with a pre-eminence over the rest. Anciently the archpriest was the first person after the bishop: he was seated in the church next after the bishop; and even acted as his vicar, in his absence, as to all spiritual concerns. In the sixth century, there were found several archpriests in the same diocese; from which time some will have them to have been called *deans*. In the ninth century, they distinguished two kinds of cures or parishes: the smaller governed by simple priests; and the baptismal churches by archpriests; who, beside the immediate concern of the cure, had the inspection of the other inferior priests, and gave an account of them to the bishop, who governed the chief, or cathedral church, in person. There are archpresbyters still subsisting in the Greek church; vested with most of the functions and privileges of chorepiscopi or rural deans.

ARCHTREASURER, the great treasurer of the German empire. This office was created with the eighth electorate, in favour of the elector Palatine, who had lost his former electorate, which was given to the duke of Bavaria, by the emperor Ferdinand II. who took it away from Frederic V. elector Palatine, after the battle of Prague, where he was defeated in maintaining his election to the crown of Bohemia. The dignity of archtreasurer was contested be-

K k

tween

Archon
||
Archtreas-
urer.

Archilute
||
Arctic.

tween the elector of Brunswick, who claimed it in virtue of his descent from the elector of Frederic and the elector Palatine.

ARCHILUTE, ARCLEUTO, a long and large lute, having its bass strings lengthened after the manner of the theorbo, and each row doubled, either with a little octave or an unison. It is used by the Italians for playing a thorough bass.

ARCHYTAS of Tarentum, a philosopher of the Pythagorean sect, and famous for being the master of Plato, Eudoxas, and Philolaus, lived about 408 years before Christ. He was an excellent mathematician, particularly in that part of the science which regards mechanics; he is said to have made a wooden pigeon that could fly, and to be the first that brought down mathematics to common uses. He is said to be the inventor of the ten categories. He asserted, that God was the beginning, the supporter, and the end, of all things. There are two epistles preserved in Diogenes Laertius, one from Archytas to Plato, and another from Plato to Archytas. He acquired great reputation in his legislative capacity. He likewise commanded the army seven times, and was never defeated; but was at last cast away in the Adriatic Sea, and thrown upon the coast of Apulia.

ARCIS-SUR-AUBE, a small handsome town of France, in Champagne, seated on the river Aube. E. Long. 4. 15. N. Lat. 48. 40.

ARCO, a strong town and castle in the Trentin, belonging to the house of Austria. It was taken by the French in 1703, and abandoned soon after. It stands on the river Sarca, near the north extremity of the lake Garda. E. Long. 9. 55. N. Lat. 45. 52.

ARCONA, a strong town situated on the island of Rugen in the Baltic. It stood on a high promontory, with the east, north, and south sides defended by steep and lofty precipices, and the west by a wall fifty feet high, proportionably thick, and secured by a deep and broad ditch. It was, however, taken and ruined, in 1168, by Valdemar king of Denmark. One of the conditions imposed by the conqueror was, that the inhabitants should destroy a temple they had erected to St Vitus, and deliver up the vast treasure belonging to this tutelary saint. Another was, that they should pay 40 silver yokes for oxen, by way of tribute, and enter as soldiers in the Danish service when called upon.

ARCOS, a strong city of Andalusia, in Spain, seated on a high craggy rock, at the bottom of which runs the Gaudeleto. Its strength lies not only in its situation, but in the works erected for its defence, and it is inaccessible on every side but one. The governor resides in an old castle, from whence there is a delightful prospect, which extends very far into the neighbouring country. W. Long. 2. 10. N. Lat. 36. 40.

ARCTIC, in astronomy, an epithet given to the north pole, or the pole raised above our horizon. It is called the *arctic pole*, on occasion of the constellation of the little bear, in Greek called *αρκτος*; the last star in the tail whereof nearly points out the north pole.

Arctic Circle is a lesser circle of the sphere, parallel to the equator, and 23° 30' distant from the north pole; from whence its name. This, and its opposite the *antarctic*, are called the two *polar circles*; and may be conceived to be described by the motion of the poles

of the ecliptic, round the poles of the equator, or of the world.

ARCTIUM, BURDOCK: A genus of the polygamia æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ capitatae*: The calyx is globular; with scales having hooks reflected at the tops.—The species are three, viz. the lappa or common burdock, the tomentosum, and the personata. All these are troublesome weeds, so require no direction for their culture. The tender stems of the common kind, deprived of the bark, may be boiled and eat like 'sparagus. When raw, they are good with oil and vinegar. Boys catch bats by throwing the prickly heads of this species up into the air. Cows and goats eat this herb; sheep and horse refuse it; swine are not fond of it. The seeds, which have a bitterish subacid taste, are recommended as very efficacious diuretics, given either in the form of emulsion, or in powder to the quantity of a dram. The roots, which taste sweetish, with a slight austerity and bitterishness, are esteemed aperient, diuretic, and sudorific; and said to act without irritation, so as to be safely ventured upon in acute disorders.

ARTOPHYLAX, (from *αρκτος*, bear, and *φυλαξ*, I guard,) in astronomy, a constellation, otherwise called *Bootes*.

ARCTOPUS, in botany: A genus of the polygamia diœcia class; and in the natural method ranking under the 45th order, *Umbellatae*. The umbella of the male is compound; the involucre consists of five leaves; the corolla has five petals; the stamina are five; and two pistilli: The umbella of the hermaphrodite is simple; the involucre is divided into four parts, is spinous, large, and contains many male flowers in the disk. There is but one species of arctopus, viz. the echinatus, a native of Ethiopia.

ARCTOTIS, in botany: A genus of the polygamia necessaria order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ discoides*. The receptacle is brittle; the corona of the pappus is pentaphyllous; and the calyx is imbricated with scales loose at the top. It is commonly called *anemospermus*, from the resemblance of its seeds to those of the anemone. The species are 11; all of them natives of Ethiopia, or the Cape of Good Hope. Of these the angustifolia with spear-shaped leaves, and the aspera with wing-shaped woolly leaves, are most remarkable for their beauty, having rays of a fine yellow or deep gold colour. They flower in May and June.

Culture. All the species of arctotis may be propagated by cuttings; which should be frequently renewed, as the old plants are subject to decay in winter. They may be planted in any of the summer months, in a bed of light fresh earth; observing to shade them from the sun until they have taken root. They should be exposed to the open air until the latter end of October, or longer, if the weather is favourable, when they must be removed into the green-house.

ARCTURUS, in astronomy, a fixed star, of the first magnitude, in the constellation of Arctophylax, or Bootes. The word is formed of *αρκτος*, bear, and *υρα*, tail, q. d. *bear's tail*, as being very near it. This star

Arctium
||
Arcturus.

Plate LIV.

*Fig. 1. ARDEA AMERICANA,
or Hooping Crane.*

*Fig. 1.
ARDEA PAVONIA,
or Crowned Crane*

Attelabus.

Ascaris.

Aphidius.



A Bell Sculp.

Arcuation star was known to the ancients, as in the following verse of Virgil:

Ardea.

Arcturum, pluviasque Hyades, geminosque Triones.

See also Job ix. 9. xxxviii. 32.

ARCUATION, in gardening, the method of raising trees by layers, which is done in the following manner:

Strong mother-plants or stools must be planted in a clear border, and in a straight line, about six feet asunder. When these have shot five or six main branches from the root, and as many collateral branches, the former must be bent to the ground, and there fastened. The small branches must be covered three inches deep upon the joints, and have a large basin of earth made round them to hold the water.

About the middle of September they may be opened, and if they have taken root, may be immediately removed into the nursery; but if they have not sufficiently extended their roots, they must be suffered to remain till the spring, and then transplanted.

ARCUCCIO, ARCTIO, a machine made of a board, covered with pieces of hoops, like the tilt of a waggon; used in Italy to prevent children from being overlaid and smothered by nurses or others. Every nurse in Florence is obliged to lay her child in an arctio, under pain of excommunication.

ARDAMON, or ARDAMA, in antiquity, a vessel of water placed at the door of a person deceased, till the time of burial, as a token that the family was in mourning, and to serve to sprinkle and purify persons as they came out of the house.

ARDASSES, in commerce, the coarsest of all the silks of Persia; and as it were the refuse of each kind. In this sense, they say, the *legis*, the *houfets*, the *choufs*, and the *payas ardasses*, to signify the worst of those four sorts of Persian silks.

ARDASSINES, in commerce, called in France *ablaques*; a very fine sort of Persian silks, little inferior in fineness to the fourbastis, or rather cherbaffis, and yet it is little used in the silk manufactures of Lyons and Tours, because that kind of silk will not bear hot water in the winding.

ARDEA, in ornithology, a genus of the order of grallæ. The general characters of this order are these: The bill is straight, sharp, long, and somewhat compressed, with a furrow that runs from the nostrils towards the point; the nostrils are linear; and the feet have four toes. Under this genus Linnæus comprehends the *grus* or crane, the *ciconia* or stork, and the *ardea* or heron, of other authors. See Plates LIV. LV.

1. The first species is the pavonia, or crowned crane, which has an erect bristly crest, with the temples and two wattles naked. The head is black; the crest is yellowish, and tipped with black at the top; the wings are white; and the feathers of the tail black, and of an equal length. It is a native of Africa, particularly the coast of Guinea, as far as cape Verd; at this last place they are said to be exceedingly tame, and will often come into the court-yards to feed with the poultry. These birds are often kept in our menageries, and, with shelter of nights, live a good while. Their chief food is supposed to be worms, and such other

things as the heron tribe usually feed on; also vegetables of all kinds. It often sleeps on one leg; runs very fast; and is said not only to fly well, but to continue on the wing for a long time together. The flesh is said to be very tough.

2. The virgo, with a straight greenish bill and crimson irides. The crown of the head is ash-colour; the rest of the head, the upper part of the neck behind, and all the under parts, to the breast, black; the back, rump, and tail, and all the under part from the breast, are of a bluish ash-colour: behind each eye springs a tuft of long white feathers, which decline downwards, and hang in an elegant manner: the quills and tail are black at the ends; the legs black. This species is found in many parts of Africa and Asia, where they frequent marshes and the neighbourhood of rivers, as their food is fish, like most of the heron genus. It is frequently kept in menageries, being endowed with great gentleness of manners, added to its being an elegant bird. At various times puts itself into strange and uncouth attitudes, especially those which imitate dancing; and Keyser mentions one in the Great Duke's gallery, at Florence, which had been taught to dance to a certain tune, when played or sung to it. The name this bird is known by in the east is *kurki*, or *querky*. Sometimes it will breed in confinement: one is recorded to have lived 24 years at Versailles, where it had been bred.

3. The leucogeranos of Pallas, or Siberian crane of Pennant, is four and a half feet when standing erect. The bill is of a red colour; the irides are white; the plumage is white as snow, except the 10 first greater quills, with the coverts of them, which are black: the legs are long and red. This species inhabits the vast marshes and lakes in Siberia, especially those about the Ischim, and along the rivers Ob and Irtysh. It makes its nest among the reeds, seldom accessible by man, upon rising green grassy tufts, made up of herbs and grass heaped together; and lays two ash-coloured eggs, spotted with brown. They are shy birds, and always upon their guard against an enemy; having a sentinel to warn them of an approach: on the least alarm they cry aloud, not unlike the swan, and fly off directly. The sportsman finds, in course, much difficulty in approaching them within gun-shot; for, as they stand near five feet high from the ground, they are enabled to espy him at a greater distance. Sometimes indeed he approaches them under cover of a stalking-horse, or other object; at other times a small dog will divert their attention, as they will without fear attack the dog, while his master gets within reach. In breeding time, however, they are more bold, as they will defend their young even against men, so as to make it dangerous to come near their haunts. The male and female are said to guard the nest by turns.

4. The *grus*, or common crane of English authors, has a naked papillous crown; the prime feathers of the wings are black; the body is ash-coloured; the prime feathers of the tail are ragged. This species is far spread, being met with in great flocks throughout northern Europe and Asia; in Sweden, Russia throughout, and Siberia as far as the river Anadyr, migrating even to the arctic circle. In Kamtschatka they are only seen on the southern promontory; are migratory, returning

Ardea.

Ardea. northward to breed in the spring, and generally choosing the same places which had been occupied by them the season before. In the winter they inhabit the warmer regions, such as Egypt, Aleppo, India, &c. they are also met with at the Cape of Good Hope, changing place with the season. In their migrations they frequently fly so high as not to be visible; their passing only being known by the noise they make, which is louder than any other bird. In France they are seen in spring and autumn; but for the most part are mere passengers. This species seems to have been formerly a native of Britain; as we find in Willoughby, page 52. that there was a penalty of twenty pence for destroying an egg of this bird; and Mr Ray informs us, that in his time they were found during the winter in large flocks in Lincolnshire and Cambridgeshire: but at present the inhabitants of those counties are scarcely acquainted with them; so that those birds seem now to have forsaken our island. We are told that they make their nest in the marshes, and lay two bluish eggs. The young birds are thought very good food. They feed on reptiles of all kinds, and in turn on green corn; of which last they are said to make so great havock, as to ruin the farmers where-ever the flocks of these depredators alight.

5. The Americana, or hooping crane of Edwards, is a native of America. The crown of the head and temples are naked and papillous; the forehead, nape of the neck, and prime wing-feathers, are black; but the body is white: The under part of the head, as far as the lower chap, is red; the beak is yellowish, and jagged at the point; the feet are red, and the prime tail-feathers white. This is an American species, often seen at the mouths of the Savanna, Aratamaha, and other rivers near St Augustine: in spring going to the north to breed, like the common crane, and returning, like that bird, to the south in autumn. In the summer they are found in Hudson's Bay, at which place they arrive in May, and retire in September; and are chiefly met with in unfrequented places, in the neighbourhood of lakes, where they breed. The nest is made on the ground, composed of grass and feathers. They lay two white eggs, like those of the swan, and sit 20 days; the young are at first yellow, changing to white by degrees. These birds have a loud long note, which may be heard at a great distance: their food is chiefly worms and insects, which it searches for at the bottom of ponds. The natives of Hudson's Bay call this species *Wapaw-uchebeauk*.

6. The argil, or hurgil, of Ives, is a very large species; from tip to tip of the wings measuring 14 feet 10 inches; and from the tip of the bill to the claws seven feet and a half: the bill is 16 inches round at the base, of different colours, and nearly of a triangular shape; the feathers of the back and wings are very strong, and of an iron colour; those of the breast long: over the belly a great deal of down, of a dirty white: the legs and half the thighs are naked; the naked parts full three feet in length.

This monster, as Ives terms it, inhabits Bengal, and is also found at Calcutta; at the last place called *Hurgill*, or *Argill*. It majestically stalks along before one, and appears at first like a naked Indian. The common opinion is, that the souls of the Bramins possess these birds. On opening one of these, a terapin, or

land tortoise, 10 inches long, was found in its craw, and a large male black cat was found entire in its stomach. In Sumatra there is said to be a great variety of the stork kind; some of a prodigious size, and otherwise curious; as the Boorong Cambing, and Booringoolar.

The same species seems to have been remarked by Mr Smeathman in Africa, while resident there; an adult of one of which will often measure seven feet when standing erect. He describes the plumage much the same as Mr Ives's bird; adding, that the gape is monstrously wide: the head is covered with white down, thinly dispersed, appeared not unlike a grey-headed man: on the middle of the neck before, a long, conic membrane, like a bladder, sprinkled very thinly with short down, rising or falling as the animal moves the beak, and always appearing inflated. These birds are met with in companies. When seen at a distance, near the mouths of rivers, coming towards an observer, which they do with the wings extended, they may well be taken for canoes, upon the surface of a smooth sea: when on the sand-banks, for men and women picking up shell-fish or other things on the beach.

One of these, a young bird, about five feet in height, was brought up tame, and presented to the chief of the Bananas, where Mr Smeathman lived: and being accustomed to be fed in the great hall, soon became familiar; duly attending that place at dinner-time, and placing itself behind its master's chair, frequently before any of the guests entered. The servants were obliged to watch it narrowly, and to defend the provisions with switches in their hands; but, notwithstanding this, it would frequently snatch off somewhat or other, and was known once to have purloined a whole boiled fowl, which it swallowed in an instant. Its courage is not equal to its voracity; for a child of eight or ten years old soon puts it to flight with a switch, though at first it seems to stand upon its defence, by threatening with its enormous bill widely extended, and crying out with a loud hoarse voice like a bear or tyger. It is an enemy to small quadrupeds, as well as birds and reptiles, and destroys fowls and chickens, though it dare not attack a hen with her young openly: it preys also on rats, young kittens, and the like; and has been known to swallow a cat whole: a bone of a shin of beef being broken asunder, serves it but for two morsels. The individual above mentioned used to fly about the island, and roost very high among the silk-cotton trees; from whence, at two or three miles distance, it could spy the dinner carrying across the yard; when, darting from its station, it would enter promiscuously with the women who carried in the dishes. When sitting, it was observed to rest itself on the whole length of the hind part of the leg. It sometimes stood near, for half an hour after dinner, with the head turning alternately, as if listening to the conversation; and during this time would every three or four minutes void the excrements, which were liquid and whitish; and took care always to do this on his legs, by wheeling the back parts round over one or the other, and this regularly on different legs; for if he had mated on the left leg last, he would be sure to do the same on the right the next time, never making any mistake.

7. The ciconia, or white stork of Ray, has naked eye-balls, and black prime wing-feathers. The skin below

Fig. 2.
Ascidia.

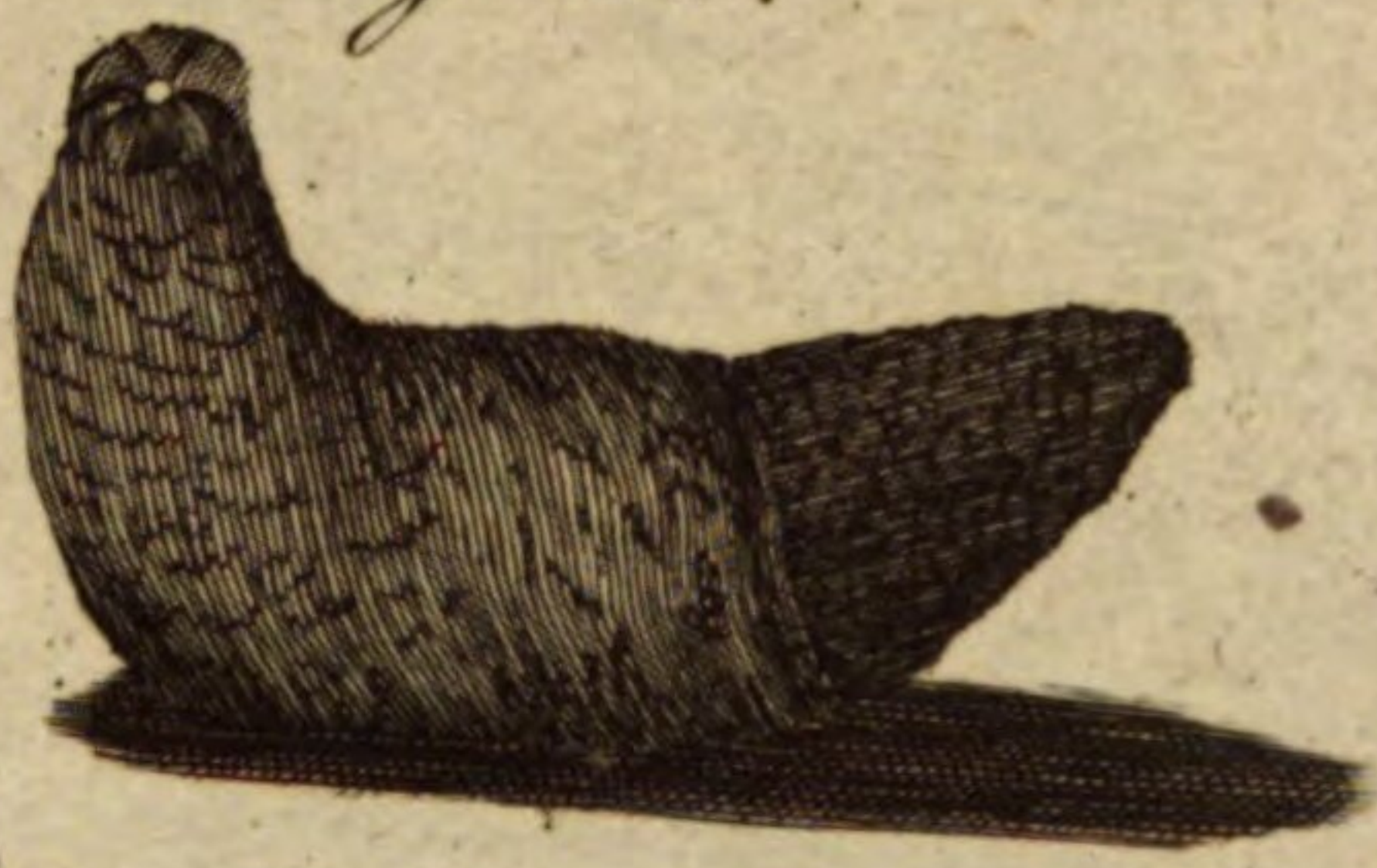


Fig. 3.
Asterias.



Fig. 4.



Asterias.

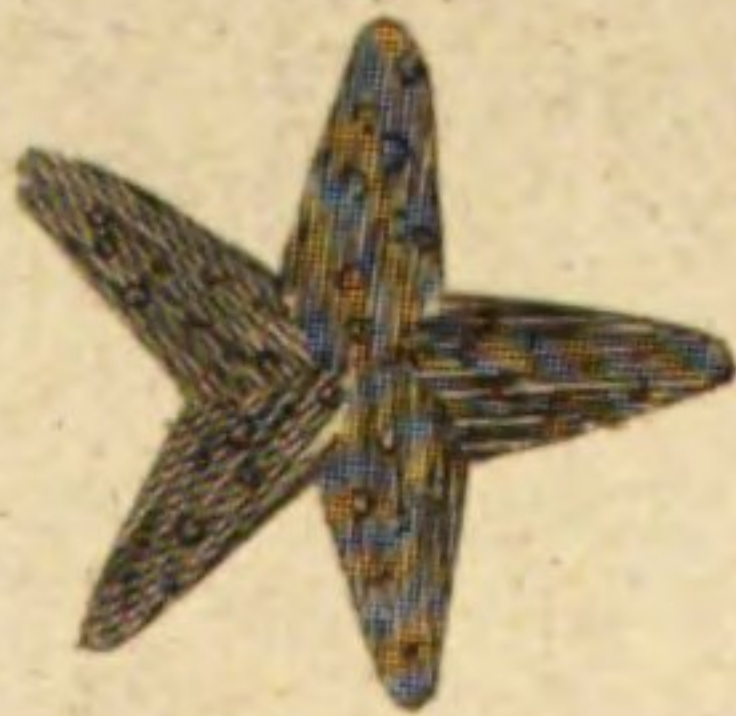


Fig. 5.

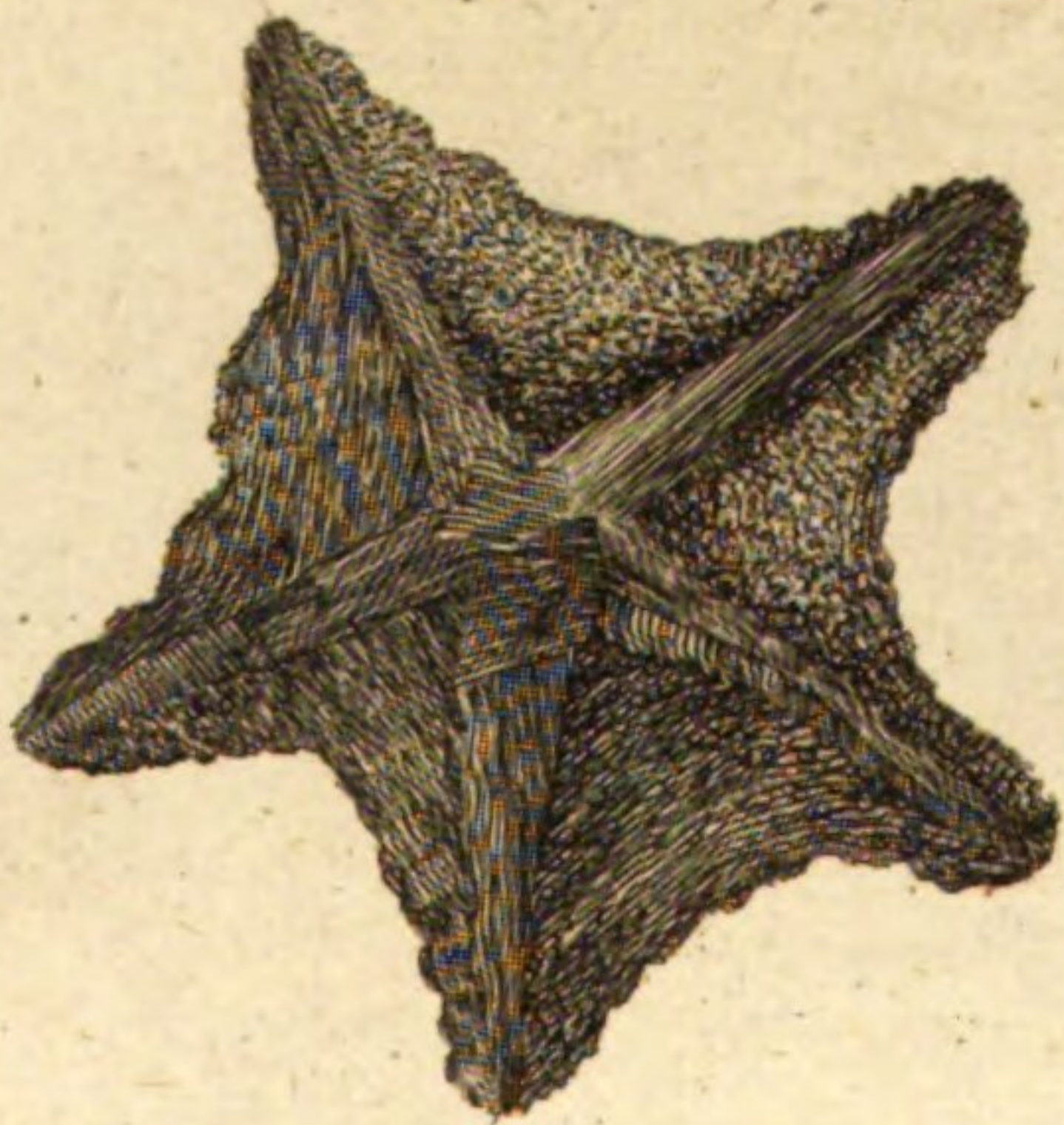


Fig. 6.



Fig. 7. *Astroites.*



Fig. 1.
Ardea Herodias



Ardea. low the feathers, as also the beak, feet, and claws, are of a blood colour. It is a native of Europe, Asia, and Africa; but is seldom or never to be met with in Italy. The ciconia feeds upon amphibious animals. It is such an enemy to serpents, that it is reckoned almost a crime to kill a stork. From this favourable treatment, they are seen in Holland and the Low Countries walking unconcerned in the middle of the streets. Storks are birds of passage: they spend the summer in Europe, and disappear all at once, and go off to Egypt, Ethiopia, &c. before winter, and do not return till about the middle of March.

8. The major, or common heron, has a black crest depending from the back part of the head, an ash-coloured body, and a black line and belt on the neck and breast. It is a native of Europe. This bird is remarkably light in proportion to its bulk, scarce weighing three pounds and an half: the length is three feet two inches; the breadth five feet four inches. The body is very small, and always lean; and the skin scarce thicker than what is called gold-beater's skin. It must be capable of bearing a long abstinence, as its food, which is fish and frogs, cannot be readily got at all times. It commits great devastation in our ponds; but being unprovided with webs to swim, nature has furnished it with very long legs to wade after its prey. It perches and builds in trees, and sometimes in high cliffs over the sea, commonly in company with others, like rooks. It makes its nest of sticks, lines it with wool, and lays five or six large eggs of a pale green colour. During incubation, the male passes much of his time perched by the female. They desert their nests during the winter, excepting in February, when they resort to repair them. It was formerly in this island a bird of game, heron-hawking being so favourite a diversion of our ancestors, that laws were enacted for the preservation of the species, and the person who destroyed their eggs was liable to a penalty of twenty shillings for each offence. Not to know the hawk from the heron-shaw

* In after-times this proverb was absurdly corrupted to, He does not know a hawk from a hand-saw.

was an old proverb*, taken originally from this diversion; but in course of time served to express great ignorance in any science. This bird was formerly much esteemed as a food; made a favourite dish at great tables, and was valued at the same rate as a pheasant. It is said to be very long lived: by Mr Keyser's account it may exceed 60 years; and by a recent instance of one that was taken in Holland by a hawk belonging to the stadtholder, its longevity is again confirmed, the bird having a silver plate fastened to one leg, with an inscription, importing it had been before struck by the elector of Cologne's hawks in 1735.—The cinerea of Linnæus is the female of this species.

9. The garzetta, or egret, is crested behind: the body is white, the beak black, and the feet greenish. It is a most elegant bird. It weighs about one pound; and the length is 24 inches, to the end of the legs 32. It is a native of the east. But that formerly it was very frequent in Britain, appears by some of the old bills of fare. In the famous feast of Archbishop Neville, we find no less than a thousand afterides, egrets, or egrittes, as it is differently spelt. Perhaps the esteem they were in as a delicacy during those days occasioned their extirpation in our islands: abroad they are still common, especially in the southern parts of Europe, where they appear in flocks. The scappulars and the

crest were formerly much esteemed as ornaments for caps and head-pieces; so that aigrette and egret came to signify any ornament to a cap, though originally the word was derived from *aigre*, a cause de l'aigreur de sa voix.

10. The herodias, or cristata maxima of Catesby, is crested behind, has a dusky-coloured back, reddish thighs, and the breast speckled with oblong black spots. It is four feet and a half when erect; the bill is about eight inches from the angle of the mouth to the end of it; and the crest is made up of long, narrow, brown feathers, the longest being five inches in length, which it can erect and let fall at pleasure. It is a native of Virginia; and feeds not only upon fish and frogs, but on lizards, efts, &c.

11. The stellaris, or bittern, has a smooth head; it is variegated through the whole body with dark-coloured spots of different figures and sizes. It is a native of Europe, and inhabits chiefly the fen-countries. It is met with skulking among the reeds and sedges; and its usual posture is with the head and neck erect, and the beak pointed directly upwards. It will suffer persons to come very near it without rising; and has been known to strike at boys and at sportsmen when wounded and unable to make its escape. It flies principally about the dusk of the evening, and then rises in a very singular manner, by a spiral ascent, till it is quite out of sight. It makes a very strange noise when it is among the reeds, and a different and very singular one as it rises on the wing in the night. It builds its nest with the leaves of water plants on some dry clump among the reeds, and lays five or six eggs of a cinerous green colour. This bird and the heron are very apt to strike at the fowler's eyes when only maimed. The food of the bittern is chiefly frogs; not that it rejects fish, for small trouts have been met with in their stomachs. In the reign of Henry VIII. it was held in much esteem at our tables, and valued at one shilling. Its flesh has much the flavour of a hare, and nothing of the fishiness of that of the heron.

12. The violacea, or crested bittern of Catesby, has a white crest; the body is variegated with black and white, and bluish below. These birds are seen in Carolina in the rainy seasons: but in the Bahama Islands, they breed in bushes growing among the rocks in prodigious numbers, and are of great use to the inhabitants there; who, while these birds are young and unable to fly, employ themselves in taking them for the delicacy of their food. They are, in some of these rocky islands, so numerous, that in a few hours two men will load one of their *calapatches*, or little boats, taking them perching from off the rocks and bushes, they making no attempt to escape, though almost full grown. They are called by the Bahamians *crab-catchers*, crabs being what they mostly subsist on; yet they are well-tasted, and free from any rank or fishy flavour.

There are 67 other species enumerated by ornithologists.

ARDEA (anc. geog.), a town of Latium, the royal residence of Turnus king of the Rutuli (Livy); so called either from the augury of the heron (Hyginus), or from the excessive heat of the country (Martial). It was a marshy, sickly situation (Strabo, Seneca). It was built by Danaë, the mother of Perseus (Virgil); about

Ardea.

Ardebil,
Arden.

about five miles distant from the sea, and twenty from Rome: now a hamlet. It was a Roman colony (Livy); the inhabitants called *Ardeates*. E. Long. 17. 49. Lat. 41. 30.

ARDEBIL, or ARDEVIL, a town of Persia in the province of Aderbijan. It was taken and burnt by Jenghiz Khan in 1222, when most of the inhabitants were destroyed: but it has been since rebuilt; and is still ranked for dignity among the best cities of the kingdom, on account of its having been the residence and burying-place of some of the Persian kings; particularly the sepulchre of Sheik Sefi is at this place, to which the people resort in pilgrimage. He founded a place, which they call his kitchen, with a revenue sufficient to maintain 1000 poor people, and to feed them three times a day. Three or four of the largest principal streets have shops, and are planted on each side with elms and linden trees, to keep off the excessive heat of the sun; but the houses are poorly built, with bricks dried in the sun: yet most of them, that are not in the bazars or market-places, have the pleasure and conveniency of a garden full of trees bearing fruit; and there are large spots in the out-parts of the town, where the houses are at a distance from each other, and the spaces between planted with trees, which render the city of a large extent. The meidan, or great square, is 300 paces long and 150 broad, having shops all round; which, when this place was in a flourishing condition, were stored with all manner of valuable commodities.

Through the city there pass two branches of a rivulet, which have been sometimes so enlarged by the melting of the snow on the mountains, that they have been forced to make canals to divert the stream. In the reign of Sha Abbas, it broke down the dykes, and carried away a great number of houses. The city is without walls, and is seated in the midst of a large plain encompassed with mountains, the highest of which lies westward, and is always covered with snow. These render the air sometimes extremely hot, and at others intolerably cold, which occasion epidemical distempers, that carry off great numbers of people. The soil produces no fruit near the city but apples, pears, and peaches; and yet is good both for corn and pasture. The sheep are so numerous, that 100,000 have passed over the city bridge in a day. There are here several sorts of mineral waters, which serve both for common bathing and for the cure of various diseases; one of these is a sulphureous spring, whose exhalations render the circumambient air extremely disagreeable. There are three springs which produce as hot water as if it was boiling, and from which waters are conveyed to the public baths in the city. About half a league from the city, on the right hand of the public road, there is a pool of standing water, which is covered all over with salt like ice. E. Long. 47. 30. N. Lat. 37. 55.

ARDEN, the common name of forests among the Celtæ, from the wildly extensive one which ranged for 500 miles in length across the country of Gaul, or covered more than half the county of Warwick in Britain, and the sites of which still retain the appellation of *Arden*, to the much smaller one of the ancient Mancenion, that covered and surrounded the site of the present Manchester. Written *Arduen* by Cæsar and Tacitus in speaking of the forest in Gaul, and *Arduen*

by Ossian in mentioning the woods of Caledonia, it cannot (says Mr Whitaker) be compounded of *ar* the prepositive article in Celtic, and the substantive *den*, as Baxter and Cambden assert it to be; but is formed of *ard* an adjective, and *ven* the same as *den*. The meaning of the name therefore is not, as Mr Baxter renders it, simply *the hills*, or even, as the ingenious translator of Ossian interprets it, the *high bill*. *Ard* signifies either *high* or *great*, and *ven* or *den* either an *bill* or *wood*. *Arduen*, *Arduen*, or *Arden*, then, means a considerable wood. Hence, only, the name became applicable to such very different sites as the *plains* of Warwickshire and the *hills* of Scotland: and it was given not only to the most extensive forests, to that which was the greatest in Gaul, or so considerable in Britain; but to many that were important only within their own contracted districts, as the wood of Mancenion above mentioned, and others.

ARDENBURG, a town of the Netherlands, in Dutch Flanders, and formerly the most considerable in that country; but has been dismantled by the Dutch. E. Long. 3. 30. N. Lat. 51. 16.

ARDENNE, a forest in France, formerly of vast extent; but the trees are in many places grubbed up, and where they stood are built cities, towns, and abbeys. At present it extends from Thionville, near the county of Liege, to Donchery and Sedan, on the confines of Champagne. The roads are so narrow in some places, that two waggons cannot pass each other; and therefore the waggoners are obliged to provide themselves with bells or horns to give one another notice to stop in time.

ARDENTES, in middle-age writers, an appellation given to those afflicted with the *ignis sacer*, or erysipelas. They were thus called, as seeming to be scorched or burned with the disease. Hence also the abbey of St Genevieve at Paris is called *Domus Ardentium*; by reason, as it is said, that great numbers were cured of that distemper at the shrine of this saint in the reign of Louis VI.

ARDES, a town of France, in Lower Auvergne, and the principal place of the duchy of Merceur. It serves as a mart for the commodities and trade between Upper and Lower Auvergne. E. Long. 3. 10. N. Lat. 45. 22.

ARDFERT, a town of Ireland, was the ancient capital of Kerry, with an university, which was held in the highest esteem. It is a bishop's see, and borough by ancient prescription, and has been held in *commendam* with the bishopric of Limerick ever since the Restoration. The Bishops were anciently called Bishops of Kerry. St Brandon, to whom the cathedral is dedicated, had his first education in this county, under Bishop Ert; but he finished his studies in Connaught, St Jarlath bishop of Tuam being his preceptor. The ruins here are very extensive. Near the cathedral was an anchoret tower, the loftiest and finest in the kingdom, being 120 feet high: it fell suddenly in 1771. In the ruined churches there are several inscriptions round the mouldings of the tomb-stones; and over an arch, behind Lord Glandore's house, is an inscription in relief done in a masterly manner, but the characters unknown.

ARDRAH, a small territory or kingdom of Africa, in Guinea properly so called. It lies at the bottom of

Ardenburg
||
Ardrah.

Ardres
||
Areca.

of the gulph of St Thomas, and has a town called *Ardres*, supposed to be the capital. The inhabitants are very licentious, and have neither temple nor any place for religious worship. However, they are very courageous; and their king was absolute till lately that the king of Dahomay made war upon this and the neighbouring territories, brought them under subjection, and burnt the towns, particularly *Ardres*. The air is very unwholesome to Europeans; yet the natives live to a great age; but the small-pox makes great destruction among them. This country is fertile in Indian corn, palm-wine, plants, and fruits, which last all the year; and they make a great deal of salt.

ARDRES, a small but strong town of France, in Lower Picardy. Here was an interview between Francis I. and Henry VIII. king of England in 1520. It is seated in the midst of a morass. E. Long. 2. 0. N. Lat. 50. 35.

ARDS, barony of, in the county of Down in Ireland: it is a narrow slip of land, in some places three, and in none above six, miles broad; but the soil is for the most part tolerably good. It lies between the lake of Strangford and the sea, and in the south part it is opposite to Lecale. Sir Thomas Smith obtained a patent for this barony from queen Elizabeth, and sent his natural son with a colony to possess it; but he was intercepted and slain by an Irishman. After Sir Thomas's death, *Ards* was granted by James I. to some of the Scots nobility.

ARDUBA, an ancient city of the Panonians. It was taken by Germanicus about the 7th year of the Christian æra; but its reduction was more owing to the disagreement that reigned among the inhabitants than to the valour of the Romans. The greater part of the citizens were for submitting; but the women, more fond of their ancient laws and liberties than the men, joined some Roman deserters, and, falling upon their husbands, killed a great number of them: but being at last overcome by the men, who then submitted to the Romans, the women either threw themselves headlong from the tops of the walls, or, setting fire to their houses, burnt themselves and their children to death.

AREA, in general, denotes any plain surface, whereon we walk, &c. The word is Latin, importing more properly a threshing floor; and is derived from *arere*, "to be dry."

AREA, in architecture, denotes the space or site of ground on which an edifice stands. It is also used for inner courts and those portions of ground.

AREA, in geometry, denotes the superficial content of any figure. Thus, if a figure, *e. g.* a field, be in form of a square, and its side be 40 feet long, its area is said to be 1600 square feet; or it contains 1600 little squares, each a foot every way.

AREB, a kind of imaginary money used in the dominions of the Great Mogul. Four arebs are equal to one crou, or 100 laes; one lac to 100,000 roupes.

AREBO, or **AREBON**, a town on the slave-coast of Guinea, in Africa, seated at the mouth of the river Formoso. The English had once a factory there, as the Dutch have still. It is a large oblong place, indifferently well peopled, and furnished with houses built of reeds and leaves. E. Long. 5. 5. N. Lat. 5. 0.

ARECA, the **FAUSEL-NUT**, in botany, a genus of the order of palmæ pennatifoliæ. The male has no calyx,

but three petals, and nine stamina; the female has no calyx; the corolla has three petals, and the calyx is imbricated. There are two species, *viz.*

1. The cathecu, a native of India. This has no branches, but its leaves are very beautiful: they form a round tuft at the top of the trunk, which is as straight as an arrow. It grows to the height of 25 or 35 feet, and is a great ornament in gardens. The shell which contains the fruit is smooth without, but rough and hairy within; in which it pretty much resembles the shell of the cocoa nut. Its size is equal to that of a pretty large walnut. Its kernel is as big as a nutmeg, to which it bears a great resemblance without, and has also the same whitish veins within when cut in two. In the centre of the fruit, when it is soft, is contained a greyish and almost liquid substance, which grows hard in proportion as it ripens. The extract of this nut has been supposed to be the terra japonica of the shops, at least that it is a very similar substance both in colour and taste: But according to later observations, the genuine drug seems to be obtained from the *Mimosa Catechu*. The fruit when ripe is astringent, but not unpalatable, and the shell is yellowish. Of this fruit there is a prodigious consumption in the East Indies, there being scarce any person, from the richest to the poorest, who does not make use of it; and the trade they drive in it is incredible. The chief use that is made of areca is to chew it with the leaves of betel, * *Cornelius* mixing with it lime made of sea-shells. *. In order to *Je Brun* chew it, they cut the areca into four quarters, and *af-* take one quarter of it, which they wrap up in a leaf *they rub* of betel, over which they lay a little of the lime; *the leaves* afterwards they tie it, by twisting it round. This bit *of betel* prepared for mastication is called *pinang*; which is a *with a red* Malayan word used all over the East Indies. The *Siam, or* *pinang* provokes spitting very much, whether it be *with white* made with dried or fresh areca; the spittle is red, *chalk.* which colour the areca gives it. This mastication cools the mouth, and fastens the teeth and gums. When they have done chewing the *pinang*, they spit out the gross substance that remains in the mouth. They are under a mistake who imagine that fresh areca melts entirely in the mouth. Nor is it a less mistake to think that the teeth which are tinged red during the time of chewing, always retain that colour. As soon as they have done chewing the *pinang*, they wash their mouth with fresh water, and then their teeth are white again. The Europeans who live at Batavia, or Malacca, and in the Sunda and Molucca islands, use *pinang* as much as the Indians do; and by washing their teeth they preserve them white. Some pretend that areca strengthens the stomach, when the juice of it is swallowed, as most of the Indians do. Another property ascribed to it is, its curing or carrying off all that might be unwholesome or corrupt in the gums. When eaten by itself, as is sometimes done by the Indians, it impoverishes the blood, and causes the jaundice; but is not attended with these inconveniences when mixed in the usual way with betel. The Samese call it *plou* in their language. The best areca of the Indies comes from the island of Ceylon. The Dutch East-India company send a great deal of it in their ships into the kingdom of Bengal. There grows in Malabar a sort of red areca, which is very proper for dyeing in that colour. The same company send some

Areca.

Areca. some of it from time to time to Surat and Amadabat, for the use of the dyers in the dominions of the Grand Mogul.

2. The oleracea, or true cabbage-palm, is the most beautiful, and perhaps the tallest, of all trees. The trunk is perfectly straight, and marked with rings at the vestigia of the footstalks of the leaves. Near the ground it is about seven feet in circumference; but tapers as it ascends, and attains the height of 170 or 200 feet. The bark is of an ash colour till within 25 or 30 feet of the extremity of the tree; when it alters at once to a deep sea green, which continues to the top. About five feet from the beginning of the green part upwards, the trunk is surrounded with its numerous branches in a circular manner; all the lowermost spreading horizontally with great regularity; and the extremities of many of the higher branches bend wavingly downwards, like so many plumes of feathers. These branches, when full grown, are 20 feet long, more or less; and are thickly set on the trunk alternately, rising gradually superior one to another: Their broad curved sockets so surround the trunk, that the sight of it, whilst amongst these, is lost, which again appears among the very uppermost branches, and is there enveloped in an upright green conic spire, which beautifully terminates its great height. The above-mentioned branches are somewhat round underneath, and slightly grooved on the upper side: They are likewise decorated with a very great number of green pennated leaves: Some of these are near three feet long, and an inch and an half broad, growing narrower towards their points, as well as gradually decreasing in length towards the extremities of the branches. As there are many thousand leaves upon one tree, every branch bearing many scores upon it, and every leaf being set at a small and equal distance from one another, the beauty of such a regular lofty group of waving foliage, susceptible of motion by the most gentle gale of wind, is not to be described. The middle rib, in each leaf, is strong and prominent, supporting it on the under side, the upper appearing smooth and shining. The pithy part of the leaf being scraped off, the inside texture appears to be so many longitudinal thread-like filaments. These, being spun in the same manner as they do hemp, or flax, are used in making cordage of every kind, as well as fishing nets, which are esteemed stronger than those usually made from any other material of the like nature.

Upon removing the large leaves, or branches, which surround the top of the trunk a little way above the beginning of the green bark just mentioned, what is called the *cabbage* is discovered lying in many thin, snow-white brittle flakes, in taste resembling an almond, but sweeter. This substance, which cannot be procured without destroying the tree, is boiled, and eaten with mutton by the inhabitants of the West Indies, in the same manner as turnips and cabbage are with us; though it must appear the height of extravagancy and luxury to fell so stately a tree, which would be an ornament to the most magnificent palace in Europe, to gratify the taste of an epicure, especially as there is but a very small part of it eatable. What is called the *cabbage-flower*, grows from that part of the tree where the ash-coloured trunk joins the green part

already described. Its first appearance is a green husky-spatha, growing to above 20 inches long and about four broad; the inside being full of small white stringy filaments, full of alternate protuberant knobs, the smallest of these resembling a fringe of coarse white thread knotted: these are very numerous and take their rise from larger footstalks; and these footstalks likewise are all united to different parts of the large parent-stalk of all. As this husky spatha is opened while thus young, the farinaceous yellow seed in embryo, resembling fine saw-dust, is very plentifully dispersed among these stringy filaments, which answer the use of apices in other more regular flowers: these filaments being cleared of this dust, are pickled, and esteemed among the best pickles either in the West Indies or in Europe. But if this spatha is not cut down and opened whilst thus young; if it be suffered to continue on the tree till it grows ripe and bursts; then the inclosed part, which whilst young and tender is fit for pickling, will by that time have acquired an additional hardness, become soon after ligneous, grow bushy, consisting of very many small leaves, and in time produce a great number of small oval thin-shelled nuts, about the bigness of unhusked coffee-berries: these, being planted, produce young cabbage-trees.

The sockets or grooves, formed by the broad part of the footstalks of the branches, are used by the negroes as cradles for their children. On the inner side of the very young footstalks are tender pellicles, which when dried, it is said, make a writing paper. The trunks serve as gutterings; the pith makes a sort of sago; and the nuts yield oil by decoction. In the pith also, after the trees are felled, there breeds a kind of worms, or grubs, which are eaten and esteemed a great delicacy by the French of Martinico, St Domingo, and the adjacent islands. These worms, says father Labat, are about two inches long, and of the thickness of one's finger; the head is black, and attached to the body without any distinction of neck. Their preparation for the table is as follows: They are strung on wooden skewers before a fire; and as soon as heated, are rubbed over with raspings of crust, salt, pepper, and nutmeg: this powder absorbs all the fat, which during the cookery would otherwise escape; when properly roasted, they are served up with orange or citron sauce. These worms being exposed for some time to the sun, are said to yield an oil which is of great efficacy in the piles. The oil in question, says Labat, is never to be heated before its application to the part affected; as repeated experiments have evinced that its spirit is totally dissipated by the fire.

ARELATE, or ARELATUM, is a town of Gallia Narbonensis, situated on the Rhone, denoting a town on, or beyond a marsh, according to the particular situation of the speaker; called *Arelate Sextanorum*, (Pliny, Mela, Coin), because it had a colony of the sixth legion. Writers of the lower age call it *Arelas*, *atis*, (Prudentius, Ausonius). There was a double Arelas, one on each side of the river and joined by a bridge, (Ausonius); that on the left side is thought to have been built by Constantine. Tiberius's father was sent by Julius Cæsar at the head of the colony, (Suetonius); and hence the appellation *Julia Paterna*, as appears from an inscription. It was the favourite

Areca.

Aremberg the place of the Romans, and greatly ornamented; and hence called *Gullula Roma*, (Ausonius). It is now called *Arles*. E. Long. 5. 5. N. Lat. 43. 40.

AREMBERG, a small town of Germany, in the circle of Westphalia, defended by a castle. It is the capital of a county of the same name, and was erected into a principality by the Emperor Maximilian II. in favour of John de Ligne, lord of Barbazon, who took the name of *Aremberg*. It is seated on the river Ayr. E. Long. 7. 3. N. Lat. 50. 27.

AREMORICA, or **ARMORICA**, a part of Gaul between the Sequana and Ligeris, (Cæsar, Hirtius); denoting a country on, or beyond the sea, *ar moer*, or *are moer*, Celtic. Pliny indeed says, that *Aquitania* was formerly called *Aremorica*; but in this he stands alone. In the lower age, the term *Aremorica* was confined to Bretagne in France.

ARENA, in Roman antiquity, a place where the gladiators fought; so called from its being always strewed with sand, to conceal from the view of the people the blood spilt in the combat. Nero is said to have strewed the arena with gold dust.

ARENARIA, or **SANDWORT**, in botany: A genus of the decandria trigynia class; and in the natural method ranking under the 22d order, *Caryophyllæ*. The calyx has five open leaves; the petals are five, and entire; the capsule is unilocular, and contains many seeds. There are 17 species of arenaria, only seven of which are natives of Britain, viz. the peploides, or sea-sandwort; the trinervis, or plantain-leaved sandwort; the serpylli-folia, or least sandwort; the saxatilis, or mountain-sandwort; the lariscifolia, or larchleaved sandwort; the tenuifolia, or fine-leaved sandwort; and the rubra or purple-flowered sandwort.

ARENACUM, or **ARENACUS**, one of the four towns or larger villages in the island of the Batavi, (Tacitus). Now *Arenheim*, in Guelderland. E. Long. 5. 20. N. Lat. 52. 2.

ARENARII, in antiquity, gladiators who combated with beasts in the arena, or amphitheatre. The arenarii were slaves of the lowest rank: so that, tho' manumitted, they were not capable of being Roman citizens. They were the same with what were otherwise called *Besliarii*.

ARENARIUM, in ecclesiastical writers, denotes a cemetery or burying-ground. The arenaria were properly a kind of pits, or holes under-ground, wherein the ancient Christians not only buried their dead, but held their religious assemblies in times of persecution.

ARENSBERG, a small town of Germany, in the circle of Westphalia, upon the river Roer. E. Long. 8. 20. N. Lat. 51. 25.

ARENSBOURG, an episcopal and maritime town of Livonia in Sweden, seated in the isle of Osel in the Baltic sea. E. Long. 22. 40. N. Lat. 58. 15.

AREOLA, among anatomists, the coloured circle surrounding the nipple of the breast.

AREOPAGUS, a sovereign tribunal at Athens, famous for the justice and impartiality of its decrees, to which the gods themselves are said to have submitted their differences. It was in the town, on a rock or hill opposite to the citadel. The word signifies strictly, *rock of Mars*.

Plutarch attributes the establishment of the Areo-

pagus to Solon. Other authors think differently: and with good reason; for it appears undeniable, that this tribunal was instituted before Solon. But the best authorities allow him the honour of its restoration. The city of Athens, governed till this time by tribunals of a circumscribed jurisdiction, which were multiplied by the most trifling accidents and circumstances, took no fixed political or civil form, however closely united the members of those tribunals were by their general views towards the public good, and by the common love of their country. As each of those tribunals could only act in proportion to the power delegated to it, it was impossible that so many different and unequal impressions should give to the great machine of the state that uniform and regular movement which, by an impulse always the same, would keep each part in the situation it should maintain with relation to the whole.

To effect this universal and harmonious power, it was necessary to unite the different channels of public authority, which, by being too much distributed, lost its force. This authority Solon collected, and placed it all in the court of Areopagus, which consequently became the main spring of the government. The judges of this court, who, under Draco, decided only in cases of murder, now took cognizance of crimes of every kind: and the same tribunal which inflicted capital punishment on murder, poisoning, burning of houses, theft, &c. struck at the roots of those crimes, by arraigning idleness, luxury, and debauchery. Equally attentive to stimulate the indolence of the young, and the languor of the old, those sage judges roused in the one the laudable ambition to serve the state, and restored to the others their former activity. Satisfied that extremes produce the same effects, they thought the republic had as much to fear from the excess of wealth as from the gripe of poverty. Hence they exacted a minute account of the effects of every individual. Hence their great severity to those idle citizens, who, instead of being useful members in a state, are its bane and its dishonour. Isocrates draws a most beautiful and striking picture of those venerable and astonishing men, and of the order and harmony which flourished in Athens by their wise administration.

The judges of the Areopagus, says that author, were more industrious to prevent crimes, by representing them in an odious light, than to establish modes of punishment. It was their opinion, that the enemies of the state were the instruments destined by the gods to punish the wicked; but that it was their province to correct and reform public and private manners. They were vigilantly attentive to the conduct of all the citizens, but particularly to that of the youth. They well knew that the impetuosity of juvenile passion gave the most violent shocks to health and growing virtue; that it was the duty of inspectors of education to soften the austerity of moral discipline with innocent pleasure; and that no recreations were more eligible than bodily exercises, which enable a young man to give a good education its full play, which improve health, give a pleasurable and agreeable vivacity, and even fortify the mind. The fortunes of the Athenians were too unequal to admit the same mode of education; and therefore the youth were trained in a manner suitable to the rank and circumstances of their respective families.

Areopagus. lies. Those of the inferior classes were taught agriculture and commerce; from this principle, that idleness is followed by indigence, and that indigence excites to the most daring and atrocious crimes. Having thus endeavoured, by wise precautions, to preclude the entrance of moral evil, they thought they had little to fear.

Exercises of the body, such as horsemanship and hunting, were objects of education to the youth of liberal fortune. In this sage distribution, their great aim was to prevent the poor from committing crimes, and to facilitate to the rich the acquisition of virtue. Not satisfied with having established good laws, they were extremely careful to see that they were observed. With this view they had divided the city into quarters, and the country into cantons. Thus every thing passed under their eyes; nothing escaped them; they were acquainted with the private conduct of every citizen. Those who had been guilty of any irregularity were cited before the magistrates, and were reprehended, or punished in proportion to their misdemeanour.

The same Areopagites obliged the rich to relieve the poor. They repressed the intemperance of the youth by a severe discipline. Corruption in magistrates was suppressed by the punishments denounced against it; and the old men at the sight of the employments of the young, felt themselves animated with a degree of juvenile vigour and activity.

Religion came likewise under the cognisance of the Areopagites. Plato durst never, as we are told by Justin Martyr, divulge his private opinion concerning the Deity. He had learned from the Egyptians the doctrine of Moses. It appeared to him the best, and he embraced it with ardour. But his dread of the Areopagites, who were attached to the prevailing system, would not permit him even to name the author of sentiments which opposed the common tradition.

The public edifices, the cleanness of the streets, the pay of the soldiers, the distribution of the public money; in a word, whatever interested the republic, was under the direction of the Areopagus. The people themselves, jealous as they were of their power, did nothing without consulting this assembly, and suffered it, without a murmur, to amend their precipitate decrees. Yet this authority, however great it may seem, was subject to the laws; by them rewards and punishments were determined; and those respectable judges gave an account of the exercise of their trust to public censors, who were placed betwixt them and the people, to prevent the aristocracy from growing too powerful.

The most important qualifications were required in those who entered into the Areopagus. Solon made a law, by which they who had not been archons for a year should not be admitted members of the Areopagus. To give more force to his law, he subjected himself to it, and was only admitted on that title. This was but the first step; those annual magistrates, after having given law to the republic, were interrogated on their administration. If their conduct was found irreproachable, they were admitted Areopagites with eulogium; but the smallest misconduct excluded them from that honour for ever. What administration was not to be expected from a tribunal so well composed?

what veneration was not due to men of such rare talents and virtue? Such respect was paid them, that people presumed not to laugh in their presence; and so well established was their reputation for equity, that those whom they condemned, or dismissed without granting their petition, never complained that they had been unjustly treated.

The edifice of the Areopagus was extremely simple; and its roof, which was at first of the most common materials, remained in that state till the time of Augustus. This we learn from Vitruvius. Orestes was the first who thought of embellishing it. He raised in it an altar to Minerva. He likewise adorned it with two seats of solid silver; on one of which the *accuser* sat, and the *accused* on the other. The one seat was consecrated to *Injury*, and the other to *Impudence*. This religious sketch was brought to perfection by Epimenides, who erected altars to those allegorical deities, and soon after a temple, which Cicero mentions in his second book of laws. This temple corresponded with that which Orestes had built to the Furies, who brought him to Athens, and procured him the protection of Minerva. Epimenides dedicated it a second time to the Furies, or *severe Goddesses*, as they were termed by the Athenians. A man was thought lost without resource, and a victim to every human ill, if he enforced a perjury by invoking the sacred name of those tremendous divinities.

Those who employed their thoughts in solving the mysteries of Paganism, imagined that the Eumenides had their temple so near the court Areopagus, that they might enlighten the judges by their inspiration, and, by their continual assistance, prevent them from committing those errors to which human weakness is liable. To propitiate those terrible deities, and to procure their favour for the Areopagus, they were worshipped with great punctuality and devotion; and the senate itself appointed their priests. Demosthenes had been nominated to preside over their sacrifices; and he thought it very extraordinary, that he, to whom the republic had confided so important an office, should be publicly impeached.

It was natural to associate with the Eumenides the other deities who shared with them the sovereign empire over the dead. Epimenides placed in their temples the statues of Pluto, of Mercury, and of Tellus. They were all, according to Pausanias, of an agreeable form. Each of them was placed upon an altar, on which the citizens, or strangers, who had been acquitted by the Areopagus, made their grateful offerings. But it was not to gratitude alone that these several deities owed all the incense that smoked upon their altars. They who had been accused before the senate, harassed with superstition, and uncertain how these deities would be affected towards them, were lavish of sacrifices to obtain their clemency, by which they hoped their judges would likewise be influenced.

The tomb of *Cædipus* was another of the ornaments of the Areopagus. It was in the outward court of the Areopagus, where a barge was likewise placed, which made a part of the pomp at the public games.

Whatever homage and implicit obedience the court of Areopagus might derive from all this religious parade, the public good was always dearer to them than

Areopagus. than any lower advantages they might have drawn from the altars and temples with which they were surrounded.

The senate assembled in a hall built on the summit of a hill, which was ascended with difficulty by the old men bent with age. However, as for some time they only assembled on the three last days of each month, they bore with patience this inconvenient situation. But public affairs multiplied to such a degree, that they were obliged to add to the three former sittings a fourth, which was held on the seventh day of the month, and which was soon succeeded by an assembly every day. Their meetings were so regular, that they were not interrupted by the most solemn festivals, till Cephisodorus was archon, who, in the third year of the 105th Olympiad, made a decree, which obliged the Areopagites to celebrate, after the example of the other courts, the Apaturian feasts, which lasted five days.

This assiduous and painful exercise of their office made the Areopagites feel all the inconvenience of the situation of their tribunal, and determined them to remove it to a part of the city called the *Royal Portico*. It was a square, exposed to all the inclemencies of the weather. When the judges, who assembled there in profound silence, had taken their places, they were inclosed by a thread, or rather a cord, drawn around them.

They held their assemblies in the night, that their attention to public affairs might not be diverted by external objects,—and (adds Lucian) that they might only be influenced by the arguments, and not by the presence and action, of the speakers. This circumstance explains a passage in Athenæus, who tells us, that none knew the numbers nor faces of the Areopagites. The custom of administering justice in the open air was not peculiar to them. It was followed by all the other tribunals when they tried for murder: for two reasons:—1st, That the judges, the sworn protectors of innocence, might not be hurt by being under cover with criminals, whose hands were polluted with blood. 2dly, That the accuser and the accused might not be under the same roof.

When all the members of the senate were convened, a herald enjoined silence, and ordered the people to retire. As soon as they had departed, the assembly proceeded to business; and as they deemed the least preference a flagrant injustice, the causes which they were to determine were drawn by a kind of lottery; and the same chance which brought them up distributed them to different numbers of judges, small or great, according to the importance of the several causes.

In early times, the parties themselves stated their cause in a simple manner. The eloquence of advocates was thought a dangerous talent, fit only to varnish crimes. But afterwards the Areopagus, on this point, relaxed from their severity;—at first the accused, and soon after the accusers, were permitted to engage those to make the attack and the defence, whose profession it was to exert the art of speaking for others with accuracy and elegance.

Sextus Empiricus seems not to have sufficiently distinguished times, where he says, that the court of Areopagus did not suffer those who are to be tried at their bar to avail themselves of the abilities of others.

What undoubtedly led him into that mistake, was an inviolable custom of that tribunal, which prohibited, in pleadings, all that warm and picturesque oratory which seduces the judgment and inflames the passions. When the suffrages were collected, each person gave his in silence. They voted with a small flint, which they held betwixt the thumb and the two next fingers, and which they put into one of the two urns that stood in a corner of the hall. One stood before the other. The first was called the *urn of death*; the second, the *urn of compassion*. That of death was of brass, and was termed *proper*; that of compassion was of wood, and was termed *improper*. The judges commonly brought their flint to the assembly, and put it into the urn; but, that all the suffrages might be collected, the herald took the two urns, and presented them, one after another, to every senator, commanding him, in the name of the republic, no longer to defer his acquittal or condemnation.

For this method of giving sentence, which was called *κρυπτον ψηφος*, because it kept the vote of each person undiscovered, the Thirty Tyrants, to make themselves masters of the decisions of the Areopagus, substituted another, by means of which they knew exactly the opinion of each of the judges; for they obliged them to bring their flints publicly, and lay them upon two tables placed before them, the situation of which was quite opposite to that of the urns; for the first of those tables was that of *life*, and the second that of *death*.

The first substances with which they gave their suffrages were not small pieces of the bones of a hog, as some authors assert, but sea-shells, for which pieces of brass of the same form, termed *spondyla*, were afterwards substituted. The substances with which they voted were distinguished by their form and colour. Those which condemned were black, and perforated in the middle; the others were white and not perforated. The precaution of piercing the black ones tends to prove, what we have already observed, that the court of Areopagus sat in the night: for what end did it serve to pierce the black shells, or flints, if the judges could have seen them and the white ones, and consequently have distinguished their colours by the assistance of the light? But as they passed sentence in the dark, it is evident that a difference besides that of colour was necessary, to know the black ones from the white. The judges were likewise permitted to multiply at pleasure the distinctions between signs, which essentially distinguished the fates of men.

After the suffrages were collected, they were taken out of the two urns, and put into a third vase of brass. They were then counted; and as the number of white or of black flints was higher or inferior, one of the judges drew with his nail a shorter or a longer line on a tablet with a waxen surface, on which the result of each cause was marked. The short line expressed acquittal; the long, condemnation.

With regard to the emoluments of the judges, they were as moderate as those of the advocates. The length of the process did not enhance its expence; and when the decision of a cause was postponed till the next day, the committee were only paid an obolus on that day. Hence Mercury, in Lucian, is surprised that such sensible old men as the senators of the Areopagus were

Areopagus. should sell at so low a price the trouble of ascending so high.

As to the number of the judges which composed the Areopagus, some authors, attentive only to a part of Solon's regulations, by which he enacted, that for the future, none but the nine archons should be admitted members of the Areopagus, have imagined, that this tribunal was filled anew every year, and that it never consisted of more than nine magistrates. This opinion, and some others, are refuted by the circumstantial account which Diogenes Laertius gives us of the condemnation of Socrates. This great man had wished to substitute a rational hypothesis for the fabulous and extravagant system of religion which prevailed in his time. His project, however laudable, appeared impious in the eye of superstition. Information was laid against him before the Areopagus, and he had as many accusers as fellow-citizens. After the charges and the answers were heard, they proceeded to suffrages. The opinions were divided, but not equally, for the number of those who condemned him exceeded by 281 the number of those who declared him innocent. He made an ironical reply to this iniquitous sentence, by telling his judges, that he took it for granted, they would admit him to a maintenance in the Prytanæum. On this sarcasm, 80 of those who had voted in his favour forsook him, went over to the opposite party, and condemned him to die. Here then we have 361 judges who condemn; to whom if we add those who persist in acquitting him, the number must be very considerable.

Of all the judgments of the Areopagus, the most famous one, excepting that of Mars, was the sentence which they passed on Orestes. His trial, which happened under Demophon the 12th king of Athens, in 375 of the Attic æra, owed all its fame to a remarkable circumstance, that gave rise to a custom which was observed ever afterwards. Orestes had killed his mother. He was accused before the Areopagus, and cited to appear in that court. He would have lost his life in consequence of the equal division of the votes, had not Minerva, moved with his misfortunes, declared herself for those who had absolved him, and joined her suffrage to theirs. Thus Orestes was saved. In veneration to this miracle, the Areopagites, whenever the suffrages were equally divided, decided in favour of the accused, by granting him what they termed *the shell of Minerva*. Cephalus and Dædalus were condemned by the Areopagus long before the time of Orestes.

We find in ancient authors some decisions of this tribunal, which bear the strongest marks of justice, though their objects are not interesting. We shall here quote an anecdote from Aulus Gellius, and Valerius Maximus, of a woman, who was accused of having poisoned her husband and her son. She was taken and brought before Dolabella, who was then proconsul of Asia. She was no sooner in his presence than she owned the fact; and added, that she had very good reasons for putting her husband and her son to death.—“I had (said she) to my first husband a son whom I tenderly loved, and whose virtues rendered him worthy of my affection. My second husband, and the son whom I bore to him, murdered my favourite child. I thought it would have been unjust to

have suffered those two monsters of barbarity to live. Areopagus, Arequiba. If you think, Sir, that I have committed a crime, it is your province to punish it: I certainly shall never repent of it.” This affair embarrassed Dolabella. She was afterwards sent to the Areopagus; and that court, when they had examined her a long time, ordered her and her accuser to appear before them again a hundred years after, from the first day of her trial.

We must not, however, suppose that the Areopagus always preserved its old reputation; for such is the constitution of human affairs, that perfection, with regard to them, is a violent, and consequently a transitory, state. Pericles, who lived about 100 years after Solon, to flatter the people and win them to his party, used his utmost efforts to weaken the authority of the Areopagus, which was then disliked by the multitude. He took from it the cognizance of many affairs which had before come under its jurisdiction; and to forward his design of humbling it, employed the eloquence of Ephialtes, whose talents were formidable, and who was an avowed enemy to the great men of Athens.

The Areopagus itself seemed to second the endeavours of a man who projected its ruin, and by its misconduct hastened its fall. The old rules of the court, by which none were admitted its members but those whose unexceptionable conduct would support its majesty, seemed too severe. They grew less delicate in their choice; and presuming that the faults with which they dispensed, would soon be reformed in the society of so many good examples, vice imperceptibly crept among them: corruption, at first secret and timid, grew insensibly open and daring, and made such progress, that the most shameful crimes were soon exhibited on the stage; and they were not copied from the low and abandoned multitude, but from those senators, once the venerable and austere censors of idleness and of vice. Demetrius, the comic poet, wrote a piece which he entitled *The Areopagites*, where he strips the mask off those hypocritical legislators, who were now equally apt to be seduced by wealth and by beauty. So much had the Athenian senate degenerated in the days of Isocrates, cir. 340 years before the Christian æra.

Before this tribunal St Paul was called to give an account of his doctrine, and converted Dionysius one of their number.

The end of this court of judicature is as obscure as its origin, which was derived from very remote antiquity. It existed, with the other magistracies, in the time of Pausanias, i. e. in the 2d century. The term of its subsequent duration is not ascertained; but a writer, who lived under the emperors Theodosius the Elder and Younger, in the 5th century, mentions it as extinct.

AREQUIBA, a city of Peru in South America, situated in W. Long. 73°. S. Lat. 17°. It is one of the most beautiful cities in all Peru, being delightfully situated in the valley of Quilca, 100 leagues from Lima, and 20 from the sea, with which it communicates by a fine river. The entrance into the harbour is rather shallow for ships of great burden; but when once they are entered, they may ride securely in 18 fathoms water. This city was founded in 1539, by order of Don Francisco Pizarro, in a place known likewise by the name of *Arequiba*; but its situation being found disadvantageous, the inhabitants obtained leave to remove.

Ares
||
Arethusa.

move to the place where the city now stands. The houses are built with stone, and vaulted; and, contrary to what is usual in warm countries, they are lofty, neatly furnished within, and finely decorated on the outside. The inhabitants also are exempt from many diseases common in other parts of Peru; which perhaps is owing to their keeping the streets clean by means of canals which extend to the river. The temperature of the air is extremely good; and though sometimes a slight frost is perceivable, the cold is never excessive, nor the heat troublesome, so that the surrounding fields are clothed with perpetual verdure. These natural advantages, however, are considerably allayed by its being very subject to earthquakes, by which it has already been five times laid in ruins; notwithstanding which, it is populous, and has among its inhabitants some of the noblest families in America.

ARES, a word of Paracelsus's, by which he would express that power of nature in the whole material world, by which species are divided into individuals.

ARETÆUS of Cappadocia, a Greek physician of the sect of the Pneumatists, lived in the reign of Augustus, according to some; according to others, under Trajan or Adrian. He wrote several treatises in the Ionian dialect, on acute diseases, and other medicinal subjects; some of which are still extant. The best edition of his works is that of Boerhaave, in Greek and Latin, with notes, printed in 1731; that of Wigan, printed at Oxford in 1723, in folio, is also much esteemed.

ARETHUSA, in fabulous history, the daughter of Nereus and Coris, and the companion of Diana, who changed her into a fountain to deliver her from the pursuit of her lover Alphæus.

ARETHUSA, a celebrated fountain near the city of Syracuse in Sicily, famous for the quantity of its waters, and the number of fishes it contained. Many fables were invented by the ancients concerning this fountain. They had also a notion that the river ALPHEUS run under or through the waters of the sea, without mixing with them, from Peloponnesus to Sicily. Mr Brydone informs us, that it still continues to send forth an immense quantity of water, rising at once to the size of a river, but is entirely abandoned by the fishes it formerly contained in such plenty. At some distance from Arethusa is a fountain of fresh water which boils up very strongly in the sea, inasmuch that, after piercing the salt water, it may be sometimes taken up very little affected by it. This fountain Mr Brydone thinks the ancients were ignorant of, or they would not have failed to use it as an argument for the submarine journey of Alpheus.

Mr Swinburn describes this once famous fountain as a large pool of water near the quay, defended from the sea by a wall, and almost hidden by houses on every other side. The water is not salt, but brackish, and fit for no purpose but washing linen. "This (says he) is the celebrated fountain of Arethusa, whose soft poetical name is known to every reader. The fable of the nymph and her constant lover Alpheus, the excellence of the spring, and the charms of its situation, are themes on which ancient and modern poets have indulged their fancy, and exercised their pens. Alas, how altered! rubbish chokes up its wholesome sources; the waves have found a passage through the rocks, which repeat-

ed earthquakes have split; and not a fish is to be seen in it. Sometimes, after an earthquake, it has been left dry; and, at other times, the whole mass of its waters have been tainted by subterraneous effluvia. Its fountain head probably lies among the neighbouring hills."

ARETHUSA, in botany: A genus of the gynandria diandria class; and in the natural method ranking under the 7th order, *Orchideæ*. The generic character is taken from the nectarium, which is tubular, situated at the bottom of the corolla, and the inferior labium fixed to the stylus. There are four species; all natives of America, except the capensis, which is only found at the Cape of Good Hope.

ARETIA, in botany: A genus of the pentandria monogynia class; and in the natural method ranking under the 21st order, *Pretie*. The corolla is divided into five parts; the tube of the corolla is ovated; and the capsule is globular, and consists of but one cell. There is only one species, viz. the alpina.

ARETIN (Guido), famous for his musical improvements, lived in the 13th century. He was a native of Arezzo, a city in Tuscany; and having been taught the practice of music in his youth, and probably retained as a chorister in the service of the Benedictine monastery founded in that city, he became a monk professed, and a brother of the order of St Benedict.

In this retirement he seems to have devoted himself to the study of music, particularly the system of the ancients, and, above all, to reform their method of notation. The difficulties that attended the instruction of youth in the church offices were so great, that, as he himself says, ten years were generally consumed barely in acquiring the knowledge of the plain-song; and this consideration induced him to labour after some amendment, some method that might facilitate instruction, and enable those employed in the choral office to perform the duties of it in a correct and decent manner. If we may credit those legendary accounts that are extant in old monkish manuscripts, we should believe he was assisted in his pious intention by immediate communications from heaven: some speak of the invention of the syllables as the effect of inspiration; and Guido himself seems to have been of the same opinion, by his saying it was revealed to him by the Lord; or, as some interpret his words, in a dream: but graver historians say, that being at vespers in the chapel of his monastery, it happened that one of the offices appointed for that day was the hymn * to St John,

UT queant laxis
MIRA gestorum
SOLVE pollutis

REsonare fibris
FAMuli tuorum
LABiis reatum,

Sancte Joannes.

* Composed by Paul, a deacon of the church of Aquileia, about the year 770.

During the performance of the hymn, he remarked the iteration of the words, and the frequent returns of UT, RE, MI, FA, SOL, LA: he observed likewise a dissimilarity between the closeness of the syllable MI and the broad open sound of FA, which he thought could not fail to impress upon the mind a lasting idea of their congruity; and immediately conceived a thought of applying these six syllables to perfect an improvement either then actually made by him, or under consideration, viz. that of converting the ancient tetrachords into hexachords.

Struck

Arethusa
||
Aretin.

Aretin.

Struck with the discovery, he retired to his study; and having perfected his system, began to introduce it into practice: the persons to whom he communicated it were the brethren of his own monastery, from whom it met with but a cold reception, which, in the epistle to his friend, he ascribes undoubtedly to its true cause, envy: however, his interest with the abbot, and his employment in the chapel, gave him an opportunity of trying the efficacy of his method on the boys who were training up for the choral service, and it exceeded the most sanguine expectation. "To the admiration of all (says cardinal Baronius), a boy thereby learnt, in a few months, what no man, though of great ingenuity, could before that attain in several years."

The fame of Guido's invention soon spread abroad, and his method of instruction was adopted by the clergy of other countries. We are told by Kircher, that Hermannus, bishop of Hamburg, and Elviricus bishop of Osnaburg, made use of it; and by the authors of the *Histoire Littéraire de la France*, that it was received in that country, and taught in all the monasteries in the kingdom. It is certain that the reputation of his great skill in music had excited in the pope a desire to see and converse with him; of which, and of his going to Rome for that purpose, and the reception he met with from the pontiff, he himself has given a circumstantial account of in the epistle hereafter mentioned.

The particulars of this relation are very curious; and as we have his own authority, there is no room to doubt the truth of it. It seems that John XX. or, as some writers compute, the 19th pope of that name, having heard of the fame of Guido's school, and conceiving a desire to see him, sent three messengers to invite him to Rome; upon their arrival, it was resolved by the brethren of the monastery, that he should go thither attended by Grimaldo the abbot, and Peter the chief of the canons of the church of Arezzo. Arriving at Rome, he was presented to the holy father, and by him received with great kindness. The pope had several conversations with him, in all which he interrogated him as to his knowledge in music; and upon sight of an antiphonary which Guido had brought with him, marked with the syllables agreeable to his new invention, the pope looked on it as a kind of prodigy; and ruminating on the doctrines delivered by Guido, would not stir from his seat till he had learned perfectly to sing off a verse: upon which he declared, that he could not have believed the efficacy of the method, if he had not been convinced by the experiment he had himself made of it. The pope would have detained him at Rome; but labouring under a bodily disorder, and fearing an injury to his health from the air of the place, and the heats of the summer, which was then approaching, Guido left that city upon a promise to revisit it and explain to his holiness the principles of his new system. On his return homewards, he made a visit to the abbot of Pomposa, a town in the duchy of Ferrara, who was very earnest to have Guido settle in the monastery of that place; to which invitation it seems he yielded, being, as he says, desirous of rendering so great a monastery still more famous by his studies there.

Here it was that he composed a tract on music, intitled *Micrologus*, i. e. "a short discourse;" which he

dedicated to Theodald bishop of Arezzo; and finished, as he himself at the end of it tells us, under the pontificate of John XX. and in the 34th year of his age. Vossius speaks also of another musical treatise written by him, and dedicated to the same person.

Most of the authors who have taken occasion to mention Guido, speak of the *Micrologus* as containing the sum of his doctrine: but it is in a small tract, intitled *Argumentum novi Cantus inveniendi*, that his declaration of his use of the syllables, with their several mutations, and in short his whole doctrine of solmisation, is to be found. This tract makes part of an epistle to a very dear and intimate friend of Guido, whom he addresses thus, "Beatissimo atque dulcissimo fratri Michaeli;" at whose request the tract itself seems to have been composed.

Whether Guido was the author of any other tracts, is not easy to determine. It nowhere appears that any of his works were ever printed, except that Baronius, in his *Annales Ecclesiastici*, tom. xi. p. 73, has given at length the epistle from him to his friend Michael of Pomposa, and that to Theodald bishop of Arezzo, prefixed to the *Micrologus*; and yet the writers on music speak of the *Micrologus* as of a book in the hands of every one. Martini cites several manuscripts of Guido; namely, two in the Ambrosian library at Milan, the one written about the twelfth century, the other less ancient; another among the archives of the chapter of Pistoja, a city in Tuscany; and a third in the Mediceo-Laurenziano library at Florence, of the 15th century: these are clearly the *Micrologus*. Of the epistle to Michael of Pomposa, together with the *Argumentum novi Cantus inveniendi*, he mentions only one, which he says is somewhere at Ratisbon. Of the several tracts abovementioned, the last excepted, a manuscript is extant in the library of Baliol-college in Oxford. Several fragments of the two first, in one volume, are also among the Harleian manuscripts now in the British Museum, N^o 3199; but so very much mutilated, that they afford but small satisfaction to a curious inquirer.

ARETIN (Leonard), one of the most learned men of the 15th century, was secretary to the republic of Florence, and translated from the Greek into Latin some of the lives of Plutarch, and Aristotle's Ethics: he also composed three books of the Punic war, that may serve as a supplement to those wanting in Livy; the history of the transactions in Italy during his time: that of ancient Greece; that of the Goths; that of the republic of Florence; and many other books. He died in 1443, aged 74.

ARETIN (Francis), a man of great reading, and well acquainted with the Greek language. He translated into Latin the Commentaries of St Chrysostom upon St John, and about 20 Homilies of the same father: he also translated the Letters of Phalaris into Latin, and wrote a treatise *De balneis Puteolanis*. He studied at Sienna, about the year 1443; and afterwards taught law there with such reputation, that they called him the *Prince of Subtilties*, and his wit became a proverb. He displayed his talents chiefly in disputes, in which nobody could withstand him. He gave his opinions in law with so much confidence, as to assure those who consulted him that they should carry their cause: nor did experience contradict him; for it was a common saying at the bar, such a cause has been condemned

Aretin.

Aretin. demned by Aretin, it must therefore be lost. He taught also in the university of Pisa, and in that of Ferrara. He was at Rome under the pontificate of Sixtus IV. but did not stay here long; for he soon perceived that the great hopes which he had built upon his reputation would come to nothing. This pope, however, declared he would have given him a cardinal's hat, had he not thought he should have done a public injury by depriving the youth of such an excellent professor. When old age would not permit him to go through the duties of his office, they dispensed with his reading of lectures, and his salary was continued. He continued, however, sometimes to mount the chair; and although his lectures had now but little spirit in them, yet he had still many hearers on account of his reputation. One day when the students were gone to some public shows, there were but 40 persons in his auditory: which so mortified him, that he threw away his book; and crying out, "Aretin shall never explain law to a few persons," retired in a passion, and would teach no more. He was severe in his temper, and never kept a servant longer than a month or two; for it was a maxim of his, "that new-hired servants always serve best." He was honoured with the title of *knight*, and spent all his life in celibacy; and his way of living was so parsimonious, that he was thereby enabled to amass a great deal of wealth. He had designed this wealth for the maintenance of a college; but he altered his resolution, and left it to his relations.

ARETIN (Peter), a native of Arezzo, who lived in the 16th century. He was famous for his satirical writings; and was so bold as to carry his invectives even against sovereigns, and from thence got the title of the *Scourge of Princes*. Francis I. the emperor Charles V. most of the princes of Italy, several cardinals, and many noblemen, courted his friendship by presents, either because they liked his compositions, or perhaps from an apprehension of falling under the lash of his satire. Aretin became thereupon so insolent that he is said to have got a medal struck, on one side of which he is represented with these words, *IL DIVINO ARETINO*; and on the reverse, sitting upon a throne, receiving the presents of princes, with these words, *I PRINCIPI TRIBUTATI DA POPOLI, TRIBUTANO IL SERVITOR LORO*. Some imagine that he gave himself the title of *Divine*, signifying thereby that he performed the functions of a god upon earth, by the thunder bolts with which he struck the heads of the highest personages. He used to boast, that his lampoons did more service to the world than sermons; and it was said of him, that he had subjected more princes by his pen than the greatest had ever done by their arms. Aretin wrote many irreligious and obscene pieces; such are his dialogues, which were called *Ragionamenti*. There is likewise imputed to him another very obscene performance, *De omnibus Veneris schematibus*. "It was about the year 1525 (says Mr Chevillier*) that Julio Romano, the most famous painter of Italy, instigated by the enemy of the salvation of mankind, invented drawings to engrave 20 plates: the subjects are so immodest that I dare only name them. Peter Aretin composed sonnets for each figure. George Vasari, who relates this in his *Lives of the Painters*, says, he does not know which would be the greatest impurity, to cast

one's eyes upon the drawings of Julio, or to dip into the verses of Aretin." Some say that Aretin changed his libertine principles; but however this may be, it is certain that he composed several pieces of devotion. He wrote a Paraphrase on the penitential Psalms, and another on Genesis; he wrote also the Life of the Virgin Mary, and that of St Catharine of Sienna, and of St Thomas Aquinas. He was author likewise of some comedies. He died in the year 1556, being about 65 years old.

ARETOLOGI, in antiquity, a sort of philosophers, chiefly of the Cynic or Stoic tribe, who having no school or disciples of their own, haunted the tables of great men, and entertained them in their banquets with disputations on virtue, vice, and other popular topics. These are sometimes also denominated *Circulatores Philosophi*. In this sense, the word is derived from the Greek *ἀρετή*, virtue, and *λόγος*, discourse. Some authors choose to derive the word from *ἀρετός*, gratus, "agreeable;" and define Aretologi, by persons who strive to divert and entertain their audience with jokes and pleasant tales; which latter seems the more natural explication.

AREZZO, a city of Italy, in Tuscany, seated in the territory of Florence, on the declivity of a hill that overlooks the neighbouring plain, between the Citta di Castelli and Florence. It is an ancient city, and a bishop's see; and was famous for a kind of earthen ware much esteemed by the Romans. It was greatly fallen to decay when Cosmo de Medicis took it under his protection; since which it has been recovering gradually. It is famed for being the birth-place of Mecænas. E. Long. 12. 2. N. Lat. 43. 27.

ARGEA, or **ARGELI**, in Roman antiquity, thirty human figures, made of rushes, thrown annually by the priests or vestals into the Tiber, on the day of the ides of May.—Plutarch, in his *Roman Questions*, enquires why they were called *Argea*. There are two reasons assigned. The first, that the barbarous nations who first inhabited these parts cast all the Greeks they could meet with into the Tiber: for Argians was a common name for all Grecians: but that Hercules persuaded them to quit so inhuman a practice, and to purge themselves of the crime by instituting this solemnity. The second, that Evander, an Arcadian, and a sworn enemy of the Argians, to perpetuate that enmity to his posterity, ordered the figures of Argians to be thus cast into the river.

ARGEIA, or **ARGOLIS**, a district of Peloponnesus, situated between Arcadia to the west, the Egean Sea to the east, Laconica and the Sinus Argolicus to the south, and to the north the territory of Corinth and the Sinus Saronicus (Livy, Ptolemy); so called from *Argos*, the capital: Now *Romania di Morea*.

By the Greeks the people were called *Argeii*, from *Argi* or *Argos*; by the Romans, *Argivi*, Argives. They were a colony who migrated, it is said, from Egypt, under the command of Inachus. Polemon and Ptolemy Mendesium, ancient Greek writers, inform us, that Inachus was contemporary with Amosis, who demolished Avaris, and expelled the shepherds out of Egypt. If, with some learned chronologers, we suppose Inachus to have begun to reform the Argives B. C. 1856, and to have died B. C. 1808, he must have been coeval with Amosis who reigned in Upper Egypt 15 years before the

Aretologi
||
Argeia.

* Origin de
l'imprimerie
de Paris,
p. 224.

Argæia
||
Argentan.

the expulsion of the shepherds, and 10 years after that event, which happened B. C. 1806. Inachus was styled the *Son of the Ocean*, because his origin was not known, or because he had come by sea into Greece. Before his arrival the inhabitants were rude and barbarous. These he united and civilized, and instructed in various arts. His son Phoroneus instituted the laws of government; and, on that account, has been called the *first king in Argos*, the *first of men*, and the *father of mortals*. The family of Inachus, after having kept possession of the throne 347 years, were expelled by Danaus, who arrived B. C. 1509 with a colony from Canaan. Acrisius, the last king of Argos, died B. C. 1313: and was succeeded by Perseus, his grandson, who transferred the seat of government to Mycenæ, 544 years from the first year of Inachus, in the reign of Cecrops II. king of Athens, and about the time when Pelops the son of Tantalus king of Phrygia, having been compelled by Ilus to leave his native country, came into Greece with great wealth, and acquired supreme power in the region afterwards called by his name. In the 37th year of Eurystheus, grandson of Perseus, the Argonautic expedition happened, i. e. B. C. 1224. This unjust and tyrannical prince had assigned to Hercules his tasks; and, after the death of that hero, he banished all his children. These were the Heraclidæ who fled to Athens for protection, and who returned to Peloponnesus 40 years after the destruction of Troy. In the reign of Agamemnon, the Trojan war commenced, and it was carried on with vigour during the space of ten years. In the year B. C. 1184, Troy was taken, and the war was concluded. Scarcely had the Grecians settled in their own country after their return from this dangerous expedition, when the posterity of Hercules invaded Peloponnesus, took possession of it, and divided it among themselves. Here the kingdom of Mycenæ ended, and that of Sparta was established on its ruins. See SPARTA.

ARGEMONE, PRICKLY POPPY: A genus of the monogynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 27th order, *Rhæadææ*. The corolla consists of six petals; the calyx is triphyllous; and the capsule is semi-valved. Of this genus there are three species, which are common in many parts of the West Indies, and called by the Spaniards the *devil's fig*; but they are of no use, and have very little beauty.

ARGENCES, a town of France, in Lower Normandy, on the river Meance. W. Long. 0. 10. N. Lat. 49. 15.

ARGENT, the common French word for *silver*, of which metal all white fields or charges are supposed to consist. Argent of itself is used in heraldry to signify purity, innocence, beauty, and gentleness; and, according to G. Leigh, if it is compounded with

Gul.	} it signifies	{	boldness;
Azu.			courtesy;
Ver.			virtue;
Pur.			favour;
Sab.			religion.

ARGENTAC, a town of France, in the Limosin, on the river Dordogne. E. Long. 2. 3. N. Lat. 45. 5.

ARGENTAN, a town of France, in Lower Normandy, and in the diocese of the Seez, with the title

of a marquisate. It is seated on an eminence, in the middle of a fertile plain, on the banks of the river Orne, and carries on a considerable trade. E. Long. 0. 5. N. Lat. 48. 54.

ARGENTARIA, a town of Ancient Gaul, thought to stand in the place where the city Colmar now stands. It is remarkable for a great victory gained by the emperor Gratian over the Lentienses, in the month of May, A. D. 378. The Romans being but few in number, were at first overpowered, and obliged to give ground; but soon returning to the charge, they gained in the end a complete victory. Thirty thousand of the barbarians, and among the rest their king Triarius, were killed on the spot; and all the rest, except 5000, taken prisoners.

ARGENTARIA *Creta*, pure white earth, found in Prussia, and much esteemed for cleaning plate.

ARGENTARIUS is frequently used in Roman writers for a money changer or banker. The argentarii were monied people, who made a profit either by the changing or lending of money at interest. These had their *tabernæ*, or offices, in the *forum Romanum*, built there as early as the reign of L. Tarquinius Priscus. The argentarii and *sceneratores* were much hated on account of their covetousness and extortion.

ARGENTATI MILITES, in Antiquity. Livy, lib. vi. speaks of *argentati milites*, as distinguished from *aurati*. Aquinas supposes these to have been similar to the *argyraspides* and *chryspides*; but the descriptions do not quadrate. Livy only represents the argentati as clothed in white linen coats.

ARGENTEUIL, a town of the Isle of France, seated on the river Seine, five miles north-west of Paris. It is a very beautiful place, with fine vineyards. In the environs are quarries of stucco. In the benedictine priory they pretend to have the seamless coat of Christ. E. Long. 2. 28. N. Lat. 48. 52.

ARGENTIERE, a small island in the Achipelago, near Milo. It is about 18 miles in compass; and is full of barren mountains, producing nothing but barley, cotton, and a few grapes fit only for eating. The barley and cotton are sown round the only village there is in the island. The ladies are handsome enough, have no other employment but making cotton stockings, and take up with the sailors who put into the port. The men all use the sea, and in time become good pilots. They have very little religion, are very ignorant, and of very bad morals. Justice is administered by an itinerant *cadi*, who is sometimes the only musfulman in the whole island. The only article relating to natural history is the Terra Cimolia so highly esteemed by the ancients; it is a kind of white chalk, which is very heavy, without taste, and crumbles easily: they use it in washing linen. E. Long. 23. 10. N. Lat. 36. 50.

ARGENTINA, in ichthyology, a genus of fishes belonging to the order of abdominales. The generic characters are these: The teeth are in the tongue as well as the jaws; the branchiostege membrane has eight radii or rays; the anus is near the tail; and the belly-fins consist of many rays. There are two species of argentina, viz. 1. The *sphyræna* has 15 rays in the fin at the anus; the air-bladder of this species is conical on both sides, and shines like silver: according to Mr Ray, false pearls are sometimes made of it. 2. The *carolina* has likewise 15 rays in the fin near the anus; the

Argentaria
||
Argentina.

Argentinus the tail is forked, and the lateral lines are straight. It inhabits the fresh waters of Carolina.

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Argo.

ARGENTINUS, a deity worshipped by the ancients, as the god of silver coin; as *Æsculanius*, whom they made his father, was the god of brass money, which was in use before silver.

ARGENTON, a town and county of France, in the duchy of Berry, divided into two by the river Creuse. Here was formerly a castle; but it was demolished by Louis XIV. E. Long. 1. 38. N. Lat. 40. 30.

ARGENTORA, *Argentina*, (Notitæ); *Argentoratum*, (Ptolemy); *Argentoratus*, (Ammian); a city of the Tribocci; one of the fifty forts built by Drusus on the Rhine, (Florus): an appellation formed by the Romans from the German, *Argen Strassen*, or *Straten*, "unsafe roads for travellers," from the marauding parties of the garrisons that infested the roads. Now

• See *Strasburg**, in the lower Alsace, on the rivulet Ill, near the Rhine. E. Long. 7. 35. N. Lat. 48. 38.

ARGENTUM. See SILVER.

ARGENTUM Album, in our old customs, silver coin, or pieces of bullion that anciently passed for money. By Doomsday tenure, some rents to the king were paid in *argento albo*, common silver pieces of money: other rents in *libris urfis et pensatis*, in metal of full weight and purity: in the next age, that rent which was paid in money, was called *blanch fearn*, and afterwards *white rent*; and what was paid in provisions, was termed *black mail*.

ARGENTUM Dei, God's penny, anciently signified earnest money, or money given to bind a bargain: in some places called *erles*, or *arles*, and by the civilians and canonists, *arrha*. *Et cepit de predicto Henrico tres denarios de argenti Dei præ manibus*.

ARGENTUM Musivum is a mass consisting of silver-like flakes, used for the colouring of plaster figures, and for other purposes, as pigment. It consists of an amalgam of equal parts of tin, bismuth, and mercury. It is to be mixed with white of eggs, or spirit varnish, and then applied to the intended work, which is afterwards to be burnished.

ARGENTUM Vivum, Mercury or Quicksilver. See MERCURY, and CHEMISTRY-Index.

ARGESTES, is used by Vitruvius for the wind which blows from that quarter of the horizon, which is 75° from the south and westward. Ricciolus uses the term to denote the wind which blows at 22° 30' from the west towards the north, coinciding with that which is otherwise called *west-north-west*.

ARGIL, in ornithology, a species of ardea. See ARDEA.

ARGILLA, clay, in natural history. See CLAY.

ARGIVI, or ARGEI, the people of Argeia or Argolis. See ARGEIA.

ARGO, in antiquity, a ship or vessel celebrated among the poets: being that wherein the Argonauts, of whom Jason was the chief, made their expedition in quest of the golden fleece. Jason having happily accomplished his enterprise, consecrated the ship Argo to Neptune; or, as others say, to Minerva, in the Isthmus of Corinth; where, they add, it did not remain long before it was translated into heaven, and made a constellation. The generality of authors represent the ship Argo as of a long make, resembling the modern galleys; and furnished with thirty benches of rowers.

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It could not, however, be of any great bulk, since the Argonauts were able to carry it on their backs from the Danube to the Adriatic sea.

ARGO Navis, the Ship Argo, in astronomy, is a constellation in the southern hemisphere, whose stars, in Ptolemy's catalogue, are 45; in Tycho's, 11; in the Britannic catalogue, and Sharp's appendix, 64.

ARGOB (anc. geog.), a canton lying beyond Jordan, in the half tribe of Manasseh, and in the country of Bashan, one of the most fruitful on the other side of Jordan. In the region of Argob there were sixty cities, called *Bashan-bavoth-jair*, which had very high walls and strong gates, without reckoning many villages and hamlets which were not inclosed, Deut. iii. 4, 14. and 1 Kings, iv. 13. But Argob was more particularly the name of the capital city of the region of Argob, which Eusebius says was fifteen miles west from Gerasa.

ARGONAUTA, the name of a genus of shell-fish belonging to the order of vermes testacea. The shell consists of one spiral involuted valve. There are two species of Argonauta, viz. The argo, with a subdentated carina, which is found in the Mediterranean and Indian oceans. This is the famous nautilus of authors. The shell seems no thicker nor stronger than a piece of paper; and the fish that inhabits it is a sepia. It has been imagined that men first learned the method of sailing in vessels from what they saw practised by this creature. When it is to sail it extends two of its arms on high; and between these supports a membrane, which it throws out on this occasion: this serves for its sail; and the two other arms it hangs out of the shell, to serve occasionally either as oars or as a steerage; but this last office is generally served by the tail. When the sea is calm, it is common to see numbers of these creatures diverting themselves with sailing about in this manner; but as soon as a storm rises, or any thing gives them disturbance, they draw in their legs, and take in as much water as makes them somewhat heavier than the sea-water in which they swim, and they then sink to the bottom. The manner of their voiding this abundant water, when they would rise again, is by a number of holes, of which their legs are full. 2. The cymbium, with a blunt plaited carina. This species is very small, and is found in the Mediterranean.

ARGONAUTIC, something belonging to the Argonauts.

The argonautic expedition is one of the greatest epochs or periods of history which Sir Isaac Newton endeavours to settle, and from thence to rectify the ancient chronology. This he shows, by several authorities, to have been one generation or about thirty years earlier than the taking of Troy, and 43 years later than the death of Solomon. See CHRONOLOGY.

Dr Bryant, however, rejects the history of the Argonautic expedition as a Grecian fable, founded indeed on a tradition derived from Egypt, and ultimately referring to Noah's preservation, &c. in the ark. But although we are not to believe all the romantic stories which poets, and even some grave historians, have told us of those famous adventurers, yet it seems unreasonable to discredit entirely the Argonautic expedition. See ARGONAUTS.

Argo
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Argonautic.

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ARGO-

Argonauti-
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Argonauts.

ARGONAUTICA, in literary history, denotes poems on the subject and expeditions of the Argonauts. We have the *Argonautics* of Orpheus in epic verse, published by H. Stephans; the *Argonauticon* of Valerius Flaccus, in eight books of Latin heroics, in imitation of Apollonius, with respect to which Burman observes that the imitator has often surpassed the original; the *Argonautics* of Apollonius Rhodius, an heroic poem, consisting of four books, *opus*, as Quintilian calls it, *non contemnendum*.

ARGONAUTS, in antiquity, a company of illustrious Greeks, who embarked along with Jason, in the ship Argo, from Colchis, with a design to obtain the golden fleece.

The occasion of this expedition is thus represented by Greek writers. Phryxus, flying with his sister Helle from the rage of their stepmother Ino, the daughter of Cadmus, went on board a ship, whose ensign was a golden ram, and sailed to Colchis (now Mingrelia, part of Georgia). Helle was drowned by the way, in that sea which from her was called the *Hellepont*, now the *Dardanelles*. This, according to some, was the ground of the poetical fable, that a ram with a golden fleece swam away with them to Colchis; and that the Argonauts undertook their famed expedition, in order to find that fleece. But Strabo and Arrian inform us, that it was a practice of the Colchians to collect gold on mount Caucasus by extending fleeces across the beds of the torrents; and as the water passed, the metallic particles remained entangled in the wool: hence, according to those historians, the adventure was named the *expedition of the golden fleece*. Sir Isaac Newton thinks that this expedition was really an embassy sent by the Greeks, during the intestine divisions of Egypt in the reign of Amenophis, to persuade the nations upon the coasts of the Euxine and Mediterranean seas, to take that opportunity of shaking off the yoke of Egypt, which Sesostris had laid upon them; and that fetching the golden fleece, was only a pretence to cover their true design.

But the most judicious and satisfactory account of the Argonautic expedition seems to be that given by Dr Gillies in his history of Greece. "The northern districts of Thessaly being peculiarly exposed to the dangerous fury of invaders, the petty princes of that province entered into a confederacy for their mutual defence. They assembled in spring and autumn at Thermopylæ, a place afterwards so illustrious, and then governed by Amphietyon, a descendant of Deucalion, whose name is immortalized in the Amphietyonic council. The advantages which the confederates derived from this measure, were soon perceived by their neighbours. The central states gradually acceded to their alliance; and about the middle of the fourteenth century before Christ, Acrisius king of Argos, and other princes of the Peloponnesus, were allowed to share the benefits and security of this useful association. See AMPHIETYONS.

"After this event, the Amphietyons appear to have long confined themselves to the original purpose of their institution. The states, whose measures were directed by this assembly, found sufficient occupation in defending their own territories; and near a century elapsed, before they undertook, by common consent,

any distant expedition. But it was not to be expected that their restless activity could be always exhausted in defensive war. The establishment of the Amphietyons brought together the chiefs most distinguished by birth and bravery, Glory and emulation prompted them to arms, and revenge directed those arms against the barbarians. Jason, Admetus, and other chieftains of Thessaly, having equipped a small fleet in the neighbouring harbour of Ioleus, and particularly the ship Argo, of superior size and construction to any before known, were animated with a desire to visit foreign lands, to plant colonies in those parts of them that appeared most delightful, and to retort on their inhabitants the injuries which Greece had suffered from strangers. The princes of the north having proclaimed this spirited design over the central and southern provinces, the standard of enterprise and glory was speedily surrounded by the flower of the Grecian youth, who eagerly embraced this honourable opportunity to signalize their manly valour. Peleus, Tydeus, Telamon, and in general the fathers of those heroic chiefs who in the succeeding age shone with distinguished lustre in the plains of Troy, are numbered among the leaders of the Argonauts. They were accompanied by the chosen warriors, and by the venerable prophets, of their respective tribes; by an Esculapius, the admired father of the healing art: and by the divine Orpheus, whose sublime genius was worthy to celebrate the amazing series of their adventures.

"These adventures, however, have been too much adorned by the graces of poetry, to be the proper subjects of historical composition. The designs of the Argonauts are veiled under the allegorical, or at least doubtful, phrase, of *carrying off the golden fleece*; which, though easily explained, if we admit the report that the inhabitants of the eastern banks of the Euxine extended fleeces of wool, in order to collect the golden particles which were carried down by the torrents from Mount Caucasus, is yet described in such various language by ancient writers, that almost every modern who examines the subject, thinks himself intitled to offer, by way of explanation, some new conjecture of his own. But in opposition to the most approved of these conjectures, we may venture to affirm, that the voyage to Colchis was not undertaken with a view to establish extensive plans of commerce, or to search for mines of gold, far less to learn the imaginary art of converting other substances into that precious metal; all such motives supposing a degree of speculation and refinement unknown in that age to the gallant but uninstructed youth of Thessaly. The real object of the expedition may be discovered by its consequences. The Argonauts fought, conquered, and plundered; they settled a colony on the shores of the Euxine; and carried into Greece a daughter of the king of Colchis, the celebrated Medea, a princess of Egyptian extraction, whose crimes and enchantments are condemned to eternal infamy in the immortal lines of Euripides."

ARGONAUTS of St Nicholas, was the name of a military order instituted by Charles III. king of Naples, in the year 1382, for the advancement of navigation, or, as some say, merely for preserving amity among the nobles. They wore a collar of shells, inclosed in a fillet crescent, whence hung a ship with this device, *Non credo tempori*, "I do not trust time." Hence these

Argonaut

Argonauts.

Argophyl- Argonaut knights came to be called *knights of the shell*. They received the order of St Basil, archbishop of Naples; and held their assemblies in the church of St Nicholas, their patron.

ARGOPHYLLUM, WHITE-LEAF (*Forst. Nov. Gen.*): A genus of the monogynia order, belonging to the pentandria class of plants. The capsule is trilocular; the nectarium is pyramidal, pentagonous, and the length of the corolla. There is but one species, the nitidum or glossy, a native of New Caledonia. This genus has great affinity with the ivy; but differs in the nectarium, and perhaps in the fruit.

ARGOS, an ancient name of Peloponnesus; from Argos one of the kings, (Homer, Strabo).

ARGOS, the capital, and an inland town, of Argolis or *ARGEIA*. It had different surnames; as *Achai-cum* from the country, or an ancient people, (Homer); *Hippium*, from its breed of horses; and *Inachium*, from the river Inachus, which runs by, or from Inachus the founder of the kingdom, whose name was also given to the river. The Argives related, that this was one of the river-gods who adjudged the country to Juno, when she contended for it with Neptune, which deity in return made their water to vanish; the reason why the Inachus flowed only after rain, and was dry in summer. The source was a spring, not copious, on a mountain in Arcadia, and the river served there as a boundary between the Argives and Mantineans.

Ancient Argos stood chiefly on a flat. The springs were near the surface; and it abounded in wells, which were said to have been invented by the daughters of Danaus. This early personage lived in the acropolis or citadel, which was named *Larissa*, and accounted moderately strong. On the ascent was a temple of Apollo on the ridge, which in the second century continued the seat of an oracle. The woman who prophesied was debarred from all commerce with the male sex. A lamb was sacrificed in the night monthly; when, on tasting of the blood, she became possessed with the divinity. Farther on was a stadium, where the Argives celebrated games in honour of Neméan Jupiter and of Juno. On the top was a temple of Jupiter, without a roof, the statue off the pedestal. In the temple of Minerva there, among other curious articles, was a wooden Jupiter, with an eye more than common, having one in the forehead. This statue, it was said, was once placed in a court of the palace of Priam, who fled as a suppliant to the altar before it, when Troy was sacked. In this city was also the brazen tower in which Danaë, being confined there by her father, was deflowered by Jupiter.

Argos retains its original name and situation, standing near the mountains which are the boundary of the plain, with Napoli and the sea in view before it. The shining houses are whitened with lime or plaster. Churches, mud-built cottages and walls, with gardens and open areas, are interspersed, and the town is of considerable extent. Above the other buildings towers a very handsome mosque shaded with solemn cypresses; and behind is a lofty hill, brown and naked, of a conical form, the summit crowned with a neglected castle. The devastations of time and war have effaced the old city. We look in vain (says Mr Chandler) for vestiges of its numerous edifices, the theatre, the gymnasium, the temples, and monuments, which it once

boasted, contending even with Athens in antiquity and in favours conferred by the gods.

ARGOS Amphilochicum, (Thucydides), a city of A-carnania, (Scylax, Pliny): its territory Amphilochia: situated on the east side of the Sinus Ambracius, (Thucydides): distant an hundred and eighty stadia to the south-east of Ambracia, (Polybius). Also called *Argia Amphilochis*, (Mela); *Amphiloci* and *Amphilochici* the people, (Stephanus). The name is from Amphilochus, son of Amphiaras; and from Argos, the name of his country, in Peloponnesus, (Thucydides).

ARGOS Hippium. See ARGOS in Peloponnesus, *supra*.

ARGOS Hippium, the ancient name of Arpi; but Lampe is a still more ancient; afterwards called *Argyrippa*, and *Argippa*; built by, and the residence of, Diomedes, on the Cerebus, (Virgil); afterwards a large and populous city, (Livy): A town of Apulia; now in ruins, and the place called *Arpi*.

ARGOS Pelasgicum, (Homer); an appellation denoting Thessaly; so called from the Pelasgi.

ARGOS Portus, a port of Tuscany, (Strabo): now Porto Ferraro, in the north of the island Elba. E. Long. 11. 30. Lat. 42. 35.

ARGUIM, an island on the coast of Africa, about sixteen miles distant from Cape Blanco, situated in W. Long. 16. 30. N. Lat. 20. 20. It is scarce two miles in length; notwithstanding which, it was a bone of contention for 87 years between the Portuguese, Dutch, English, and French; and, after a variety of fortune, has at last been totally abandoned.

This island was first discovered by the Portuguese in 1444, when a fleet bound to the east touched at Arguim, and from some little trade carried on with the natives, it was imagined that a settlement there might be of some advantage to Portugal. In consequence of this opinion, a fort was erected on the island, and the Portuguese enjoyed the peaceable possession of it till 1638. At this time, the Dutch having received a minute account of the condition of the island, resolved to attack it; and accordingly landed without molestation from the garrison, which was too weak to oppose them. The Portuguese, however, defended themselves with great intrepidity, and at last surrendered upon honourable terms. The Dutch immediately set about repairing the fortifications, and securing it in the best manner they could: however, in 1665, the fort was reduced almost to an heap of rubbish by an English squadron; but as the fortifications were totally destroyed, and only a small garrison left there, it was easily retaken by the Dutch the next year. They now redoubled their diligence in strengthening the island, entering into alliance with Moorish chiefs, procuring a number of families to settle under protection of the fort, and giving extravagant prices for gums, in order to monopolize the gum-trade. By this means the gum-trade of the French Senegal company was almost entirely destroyed; upon which they fitted out a squadron, dispossessed the Dutch, and had the island finally ceded to them by the treaty of Nimeguen.

Though the Dutch now seemed to be finally expelled, they resolved not to part so easily with such a valuable settlement. Under pretence of being subjects of the elector of Brandenburg, therefore, they erected one of the forts which had been demolished, and

Arguim

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Argutiae.

there maintained themselves in spite of the utmost endeavours of the French company to dispossess them. Numberless were the memorials, protests, rescripts, &c. which were published on this occasion, till a new war in 1701 put an end to them. In 1717, however, the French company having found all their remonstrances ineffectual, fitted out a new squadron; but this armament did not arrive at Arguim before Feb. 26th, 1721. The Dutch defended themselves with such intrepidity and conduct as had almost baffled the utmost efforts of the French; but the latter having found means to draw off a Moorish chief from his allegiance, the Dutch were obliged to evacuate Arguim, and retire to Portendic, where they fortified themselves, determining to watch a favourable opportunity for recovering their settlement at Arguim. This was not long wanting, by means of the weakness of the garrison and the imprudence of Duval the French director; who having quarrelled with the Moors, was surprised, defeated, and killed by them; in consequence of which, the settlement fell again into the hands of the Dutch on the 11th of Jan. 1722. In 1723, the Dutch were attacked by another French squadron under the command of the Sieur Rigaudiere. This gentleman boasted that the fort could not hold out one day; but though he prevailed so far as to get possession of the cisterns which contained the water of the besieged, he was at last shamefully repulsed, and forced to raise the siege with precipitation. The Dutch however, did not long enjoy the possession which they had so bravely defended; for, in 1725, their fort was entirely demolished by the French under Du Casse, and has never since been rebuilt by any European nation.

ARGUMENT, in rhetoric and logic, an inference drawn from premises, the truth of which is indisputable, or at least highly probable. See **LOGIC**.

ARGUMENT, in matters of literature, denotes also the abridgment or heads of a book, history, comedy, chapter, &c. See **SYLLABUS**.

ARGUMENTATION, the act of inventing or framing arguments, of making inductions, and drawing conclusions. See **INDUCTION**, &c.

Argumentation, according to Cicero, is the delivering or unfolding of an argument.—The matter of argumentations is propositions; the form, their due disposition, with regard to one another, so as a conclusion may be drawn from them. See **ENTHYME**, **PROPOSITION**, **RATIOCINATION**, **SORTES**, **SYLLOGISM**, &c.

ARGUS, in fabulous history, was the son of Aristor, and had 100 eyes, 50 of which were always open. Juno made choice of him to guard Io, whom Jupiter had transformed into a white heifer; but Jupiter, pitying Io for being so closely confined, sent Mercury, who, with his flute, charmed Argus to sleep, sealed up his eyes with his caduceus, and then cut off his head; when Juno, to reward his fidelity, turned him into a peacock, and placed his eyes in his tail.

Argus-shell, a species of porcelain-shell, beautifully variegated with spots, resembling in some measure those in a peacock's tail.

ARGUTIAE, witty and acute sayings, which commonly signify something further than what their mere words at first sight seem to import.—Writers on rhetoric speak of divers species of argutiae, viz.

ARGUTIAE ab alieno, when something is said, which

seems repugnant either to the nature and property of a thing, or to common custom, the laws, &c. which yet in reality is consistent therewith; or when something is given as a reason of another, which yet is not the reason of it. For instance, *Si Caius nihil didicisset, errasset minus*: again, *Aureum hoc saeculum est, quia plurimus jam auro honos venit*.

ARGUTIAE ab allusione, those wherein allusion is made to some history, fable, sentence, proverb, or the like; e. gr. *Multi umbram captant & carnem amittunt*.

ARGUTIAE a comparatis, when two things are compared together, which yet at first sight appear very different from each other, but so as to make a pretty kind of simile or dissimile; e. gr. *Par est pauper nil cupiens principi omnia habenti*.

ARGUTIAE a repugnantibus, when two things meet in a subject, which yet regularly cannot be therein; or when two things are opposed to each other, yet the epithet of the one is attributed to the other; e. gr. *Dum tacent clamant*.

ARGYLE (dukes of,) See **CAMPBELL**.

ARGYLESHIRE, or **ARGATHIA**, in Scotland; which, together with Perthshire and the Western Islands, is said to have constituted the ancient Kingdom of the Scots, while the rest of Caledonia was subject to the Picts and Romans, comprehends Kintyre, Knapdale, Argyle Proper, Cowal and Lorn. It is bounded on the south by the Irish sea and the Frith of Clyde: on the east, by Perthshire; on the north-east, by Lochaber; and on the north-west, by several islands. The extent of it from south to north, between the Mull of Kintyre and the point of Ardnamurchan where it joins the shire of Inverness, is about 114 miles; and the breadth in some places, including the isles, to 70. This country, like all other parts of the Highlands, affords a very wild and horrid prospect of hills, rocks, and huge mountains, piled upon each other in a stupendous and dreadful disorder; bare, bleak, and barren to the view; or at best covered with shagged heath, which appears black and dismal to the eye, except in the summer, when it is variegated with an agreeable bloom of a purple colour. The coast of Argyle is rocky; yet indented with bays and inlets, that afford good harbours for shipping. The country is well watered by rivers, brooks, and lakes, abounding with fish; the vales and flat parts of it are cultivated for corn; the mountains feed an innumerable quantity of black cattle, which run wild among the hills in winter as well as summer; the heath and woods, of which there is a considerable number, afford shelter to deer, roebucks, and all sorts of game in great plenty: the circumambient sea, with its locks, bays, and harbours, pours forth myriads of fish; but the innate wealth of the country is dug from the bowels of the mountains in iron, copper, lead, and other metals and minerals.

Argyle is the seat of a provincial synod, consisting of five presbyteries and 49 parishes; and gives the titles of *duke* and *earl* to the noble family of Campbell, the most powerful of all the Scottish nobility. The Duke of Argyle is, by hereditary right, great master of the king's household in Scotland; admiral of the Western isles; general of Denoon castle; keeper of Dunstaffnage and Carrick; and, before the jurisdictions were abolished, enjoyed other hereditary offices, which rendered

Argutiae

||
Argyle-shire.

Argyleshire dered him too powerful as the subject of a limited monarchy. He still possesses many royalties; his vassals, even of the name of *Campbell*, are so numerous, and his influence extends so far, that he could, on occasion, bring 3000 or 4000 fighting men into the field. Argyleshire is in general peopled by this clan; and affords a great number of castles and seats belonging to gentlemen who hold of the duke, and boast themselves descended from his family.

Argyle Proper is bounded by Knapdale and Cowal on the south; Lochaber on the north; Lennox and the Grampian hills on the east; and Lorne on the west. It lies between Lochfyn and Lochlow; which last is a fresh-water lake, about a mile broad, but extending 24 in length, including 12 islands, on two of which there are the castles of Enconel and Glenurquhart. This lake, which gives the title of *viscount* to the duke of Argyle, issues in the river Aw, which, after a course of six or seven miles, enters Loch Ettiff, and this falls into the west sea, opposite to the isle of Mull: all these abound with excellent trout and salmon. Argyleshire sends one member to parliament.

When the projected canal shall be completed, and some villages and harbours erected, the populous county of Argyle (Mr Knox affirms) will become one of the most valuable provinces in the British empire. It abounds in black cattle, sheep, and fish, though the latter are less numerous than those on the more northern shores. Washed on both sides by the sea, deeply indented by navigable lakes and bays; having an easy communication with the fishing grounds on the North Highlands; with Glasgow, and the trading towns on the Clyde; with Ireland, Wales, Whitehaven, Liverpool, Bristol, and other marts on the west coast of England, we may easily conceive, that the period is at no great distance, when Argyleshire will become a great commercial county. To corroborate this opinion, he observes, that after a vessel gets under sail from this coast, she enters at once into the Atlantic, where she meets with no interruption till she makes the coast of America or the West Indies. The line, therefore, which nature points out for the inhabitants, is that of salt-making, fishing, ship-building, freights or the carrying trade; soap and glass-making, by means of the kelp upon their shores, and sand found upon Gila island, which is adapted for the latter.

ARGYRASPIDES, or **ARGYROASPIDES**, in antiquity, persons armed with silver bucklers, or bucklers silvered.

The argyraspides, according to Quintus Curtius, made the second corps of Alexander's army; the first was the phalanx.—According to Justin's account, lib. xii. cap. 7. Alexander having penetrated into India, and extended his empire as far as the ocean; for a monument of his glory, ordered the armour of his soldiers, and the housings of his horses, to be adorned with silver. And hence commanded them to be called *argyraspides*, from the Greek *argyros*, *silver* and *aspis*, *buckler*.

By this author it should seem, that Alexander's whole army were called *argyraspides*.—After that prince's death, the argyraspides despised all other chiefs of the army, disdaining to obey any other having borne arms under Alexander.

ARGYRIPÆ. See **ARGOS Hippium**.

ARGYRUNTUM, a maritime town of Illyria (Ptolemy, Pliny). Now Novigrad, a town of Dalmatia. E. Long. 17. 30. Lat. 44. 30.

ARHUSEN, a diocese of North Jutland in Denmark, to the south of Wilburg, about 60 miles in length and 30 in breadth. It contains two capital cities, called *Arhusen* and *Rander*; besides several market-towns of less note, and upwards of 300 villages. Arhusen, one of the capitals, is advantageously situated on the coast of the Baltic Sea, at the mouth of the river Guda, which runs through it; and it is surrounded with forests full of game. E. Long. 10. 0. N. Lat. 56. 10.

ARIA, one of the ancient names of Thrace, (Stephanus); that is *martial*, from the character of the people, whose country Euripides calls the residence of Mars, and Sophocles his place of nativity.

ARIA, and *Ariana* (anc. geog.), whether the same or distinct countries authors are not agreed. Ptolemy has only *Aria*, and knows nothing about *Ariana*. Pliny mentions only *Ariana*, and says nothing about *Aria*; but distinguishes between the *Arii* and *Ariani*: Parthia, he says, has the *Arii* to the east, Carmania and the *Ariani* to the south; from which it is conjectured the *Ariani* extended farther than the *Arii*, and comprised the *Gedrosii* and the *Drangæ*. Arrian has only *Aria* and *Arii*, and is silent about *Ariana*. But Strabo gives more extensive bounds to *Ariana* than to *Aria*, without particularly defining them: only in general he says, that *Ariana* begins from India, and quotes Eratosthenes; according to whom, *Ariana* is bounded by the Indus on the east; on the south by the Great Sea; by *Paropamisus* on the north, and by the mountains, quite to *Portæ Caspiæ*; on the west by the same boundaries by which Parthia is separated from Media, Carmania from *Parætacene* and *Persia*: and thus *Ariana* is extremely extensive.—*Aria* has its limits thus described by Ptolemy: On the north, some parts of *Margiana* and *Bactriana*: on the east, the *Paropamisidæ*; on the south, the *Drangiana*: and Strabo says, the *Arii* adjoin to the *Paropamisidæ* on the west.

ARIA, called *Ariapolis*, (Strabo): Now Herat, in Chorasan, set down in an ancient map as situated on the river *Arias*, which probably gave name to the country *Aria*. Arrian calls the river *Arios*; Pliny, *Arius*; Ammian, *Arias*; now Heri, which runs by Alexandria, also called *Alexandria Arion* or *Arionum*.

ARIADNÆA, in Grecian antiquity, two festivals at Naxos, in honour of two women named *Ariadne*. One of them being the daughter of king Minos, they had, in the solemnity dedicated to her, a shew of sorrow and mourning; and, in memory of her being left by Theseus near the time of child-birth, it was usual for a young man to lie down and counterfeit all the agonies of a woman in labour. This festival is said to be first instituted by Theseus, to atone for his ingratitude to that princess.—The other *Ariadne* was thought to be of a gay and sprightly temper; and therefore her festival was observed with music and other expressions of mirth and joy.

ARIADNE, daughter of Minos, king of Crete. Theseus being sent to destroy the Minotaur, *Ariadne* was so taken with him, that, as a testimony of her love, she gave Theseus a clue of thread to guide him out of the labyrinth. Theseus, having killed the Minotaur,

Argyrun-
tum
||
Ariadne.

Ariadnia
||
Ariana.

notaur, carried off the Athenians he had relieved, together with Ariadne; whom, however, he afterward forsook.

ARIADNIA, in antiquity. See ARIADNÆA.

ARIANA, (anc. geog.), an extensive country, comprising Paropamisus, Arachosia, Drangiana, and Gedrosia, if we suppose it to reach to the sea. See ARIA.

ARIANNA, a small village six miles N. E. from the city of Tunis. Here is a beautiful range of the ancient Carthaginian aqueduct, 74 feet high, supported by columns 16 feet square, and which still increased in grandeur the nearer it approached Carthage. The stones are all diamond-cut. Near this spot several ancient mattamones, or subterraneous magazines for corn, have been discovered within these few years, capable of containing 100 bushels, strongly arched with large square stones. The moors have already begun to demolish them, it being their custom to do so with every thing beautiful as soon as it comes to light.

ARIANO, a town of Italy, in the kingdom of Naples, in the ulterior principality, with a bishop's see. Mr Swinburne describes it as an ugly city, built upon the uneven summit of a mountain, with an extensive look-out on all sides, but exposed to every blast that blows. It does not appear to be so old as the time of the Romans; therefore may be supposed to owe its rise to the demolition of some neighbouring town, and to the advantages its situation afforded for discovery and defence. It is but a poor place, without trade or manufactures; having declined ever since the desolation caused by an earthquake in 1456. It reckons about 14,000 inhabitants, and no less than 20 parishes and convents, besides an ill endowed cathedral. The wine made here is pale, like red Champagne, which it also resembles in a certain tartness, exceedingly refreshing in hot weather. The soil lies upon a soft argillaceous stone. At a small distance to the east is a bank consisting of layers of volcanical earths, interspersed with thick strata of oyster-shells.

Below the town is a convent of Dominicans, whose house, within these last hundred years, has been thrice rebuilt, having been as often thrown to the ground by earthquakes. The last and most destructive happened in 1732, fatal to all the country that lies along the eastern verge of the Apennine. In order to secure a retreat in case of future accidents, which from their situation they have every reason to expect, these fathers have constructed a small building of wood, the parts of which being joined together with strong iron chains, are contrived so as to have a proper play, and by yielding to the oscillatory motion of the earth, return easily to their equilibrium. E. Long. 15. 19. N. Lat. 41. 8.

ARIANS, followers of Arius, a presbyter of the church of Alexandria about the year 315; who maintained, that the son of God was totally and essentially distinct from the Father; that he was the first and noblest of those beings whom God had created, the instrument by whose subordinate operation he formed the universe; and therefore inferior to the Father both in nature and dignity: also, that the Holy Ghost was not God, but created by the power of the Son.

The Arians owned that the Son was the word, but denied that word to have been eternal. They held, that Christ had nothing of man in him but the flesh,

to which the *λογος* or Word was joined, which was the same as the soul in us. See *Lardner's Credibility*, &c. Vol. IX. b. i. c. 69.

The Arians were first condemned and anathematized by a council at Alexandria in 320, under Alexander, bishop of that city; who accused Arius of impiety, and caused him to be expelled from the communion of the church: and afterwards by 380 fathers, in the general council of Nice, assembled by Constantine in the year 325. But, notwithstanding that, it was not extinguished: on the contrary, it became the reigning religion, especially in the east, where it obtained much more than in the west. Arius was recalled from banishment by the emperor Constantine in two or three years after the council of Nice, and the laws that had been enacted against him were repealed. In the year 335, Athanasius, his zealous opponent, was deposed and banished into Gaul, and Arius and his followers were reinstated in their privileges, and received into the communion of the church. In little more than a year after this, he fell a victim to the resentment of his enemies, and died a tragical death, occasioned probably by poison, or some other violence. The Arian party found a protector in Constantius, who succeeded his father in the empire of the east; and the zeal with which he abetted them produced many animosities and tumults to the time of his death in the year 362. They underwent various revolutions, persecuting and oppressed, under succeeding emperors, according to the degree of interest they had in the civil power, till at length Theodosius the Great exerted every possible effort to suppress and disperse them.

The Arians were divided into various sects, of which ancient writers give an account under the names of *Semi-Arians*, *Eusebians*, *Aetians*, *Eunomians*, *Acacians*, *Psathyrians*, and others. But they have been commonly distributed into three classes, viz. the *Genuine Arians*, *Semi-Arians*, and *Eunomians*.

Arianism was carried in the fifth century into Africa under the Vandals; and into Asia under the Goths; Italy, the Gauls, and Spain, were also deeply infected with it; and towards the commencement of the sixth century, it was triumphant in many parts of Asia, Africa, and Europe. But it sunk almost all at once, when the Vandals were driven out of Africa, and the Goths out of Italy, by the arms of Justinian. However, it revived again in Italy under the protection of the Lombards in the seventh century.

Erasmus seems to have aimed in some measure to restore Arianism at the beginning of the sixteenth century, in his *Commentaries on the New Testament*. Accordingly, he was reproached by his adversaries with Arian interpretations and glosses, Arian tenets, &c. To which he made little answer, save that there was no heresy more thoroughly extinct than that of the Arians: *Nulla heresis magis extincta quam Arianorum*. But the face of things was soon changed. Servetus, a Spaniard by nation, published in 1531 a little treatise against the Trinity, which once more revived the opinions of the Arians in the West. Indeed he rather showed himself a Photinian than an Arian; only that he made use of the same passages of Scripture, and the same arguments against the divinity of our Saviour, with the proper Arians.

It is true, Servetus had not, properly speaking, any dif-

Arians.

Arians
||
Arica.

disciples; but he gave occasion after his death to the forming of a new system of Arianism in Geneva, much more subtle and artful than his own, and which did not a little perplex Calvin. From Geneva the new Arians removed to Poland, where they gained considerable ground; but at length became Socinians.

The appellation *Arian* has been indiscriminately applied, in more modern times, to all those who consider Jesus Christ as inferior and subordinate to the Father; and whose sentiments cannot be supposed to coincide exactly with those of the ancient Arians. Mr Whiston was one of the first divines who revived this controversy, in the beginning of the 18th century. He was followed by Dr Clarke, who published his famous book, intitled *The Scripture Doctrine of the Trinity*, &c. In consequence of which, he was reproached with the title of *Semi-Arian*. He was also threatened by the convocation, and combated by argument. Dr Waterland, who has been charged with verging towards Tritheism, was one of his principal adversaries. The history of this controversy during the present century, may be found in a pamphlet, intitled *An account of all the considerable Books and Pamphlets that have been wrote on either side, in the Controversy concerning the Trinity, from the year 1712; in which is also contained an Account of the Pamphlets written this last year, on each side, by the Dissenters, to the end of the year 1719*. Published at London 1720.

ARICINA, in mythology, a surname of Diana; under which appellation she was honoured in the forest Aricine, so called from Aticia a princess of the blood-royal of Athens. Hippolytus, to whom this princess was married, is said to have erected a temple to Diana in this forest, where he was concealed after his resurrection by Esculapius, and to have established a priest and festivals.

ARIAS MONTANUS, a learned Spanish divine, employed by Philip II. of Spain to publish another edition of the Bible, after that of cardinal Ximenes; which he finished with applause, and died at Seville in 1598.

ARICA, a port town of South America, in the province of Los Charaes, in Peru. It was formerly a considerable place: but the earthquakes, which are frequent here, have almost entirely ruined it; for there are no more than 150 families, which are most of them blacks, mulattoes, and Indians. Most of the houses are made with canes or reeds, set upright, and bound together with cords or thongs; and as it never rains here, they are covered only with mats, which makes the place look at a distance like a heap of ruins.

The vale of Arica is about a league wide, and six leagues long, next the sea, and is all a barren country, except the spot where the old town stood, which is divided into little meadows of clover grass, and plots for sugar canes, with a few olive and cotton trees intermixt. This vale grows narrower as it runs eastward: and a league up there is a village, where they begin to cultivate pimento or Jamaica pepper, which is planted throughout all the rest of the vale; and there are several farms, which produce nothing else, that bring in the value of 80,000 crowns yearly. The Spaniards of Peru are so used to this pepper, that they dress no provisions without it. W. Long. 70. 15. S. Lat. 18. 26.

ARICONIUM, a town of the Silurus, (Antonine); now Hereford, (Camden) W. Long. 2. 42. Lat. 52. 6.

ARIDAS, a kind of taffety, manufactured in the East Indies, from a shining thread which is got from certain herbs, whence they are styled *aridas of herbs*.

ARIDULLAM, in natural history, a kind of zarnich found in the East Indies. See ZARNICH.

ARIES, in zoology. See OVIS.

ARIES, the battering ram. See BATTERING-Ram.

ARIES, in astronomy, a constellation of fixed stars, drawn on the globe, in the figure of a ram. It is the first of the twelve signs of the zodiac, from which a twelfth part of the ecliptic takes its denomination.

ARILLUS, an improper term invented by Linnæus, and defined to be the proper exterior coat or covering of the seed which falls off spontaneously.

All seeds are not furnished with an arillus; in many, a dry covering, or scarf-skin, supplies its place. In Jessamy; hound's tongue, *cynoglossum*; cucumber; fraxinella, *dictamnus*; staff-tree, *celastrus*; spindle-tree, *euonymus*; African spiræa, *diosma*; and the coffee-tree, *coffea*; it is very conspicuous.

In the genus hound's tongue, four of these arilli, or proper coats, each enfolding a single seed, are affixed to the stylus; and in this circumstance, says Linnæus, does the essence of the genus consist. In fraxinella, the arillus is common to two seeds. The staff-tree has its seeds only half involved with this cover.

The arillus is either *baccatus*, succulent, and of the nature of a berry; as in the spindle-tree, *euonymus*. *Cartilagineus*, cartilaginous, or gristly; as in the African spiræa, *diosma*. *Coloratus*, coloured; as in the staff-tree. *Elasticus*, endued with elasticity, for dispersing the seeds; as is remarkable in the African spiræa, *diosma*, and fraxinella. *Scaber*, rough and knotty; as in hound's tongue.

Although covered with an arillus or other dry coat, seeds are said to be naked (*semina nuda*) when they are not inclosed in any species of pericarpium or fruit-vessel; as in the grasses, and the *labiati* or lipped flowers of Tournefort, which correspond to the *didynamia gyniospermia* of Linnæus. Seeds are said to be covered (*semina testâ*) when they are contained in a fruit-vessel, whether capsule, pod, or pulpy pericarpium, of the apple, berry, or cherry kind: (See SEMEN). This exterior coat of the seed is, by some former writers, styled *calyptra*. See CALYPTRA.

The different skins or coverings of the seed, are adapted, say naturalists, for receiving the nutritive juices, and transmuting them within.

ARIMANIUS, the evil god of the ancient Persians. The Persian Magi held two principles: a good dæmon or god, and an evil one: the first the author of all good, and the other of all evil: the former they supposed to be represented by light, and the latter by darkness, as their truest symbols. The good principle they named *Yezad* or *Yezdan*, and *Ormazd* or *Hormizda*, which the Greeks wrote *Oromasdes*; and the evil dæmon they called *Abriman*, and the Greeks *Arimanius*. Some of the Magians held both these principles to have been from all eternity; but this sect was reputed heterodox: the original doctrine being, that the good principle only was eternal, and the other created. —Plutarch (*De Iside et Osiride*, p. 369.) gives the following

Ariconium
||
Arimanius.

Arimanius || following account of the Magian traditions in relation to these gods and the introduction of evil into the world, viz. The Oromazes consisted of most pure light, and Arimanius of darkness; and that they were at war with each other: that Oromazes created six gods; the first, the author of benevolence; the second, of truth; the third, of justice, riches, and the pleasure which attends good actions; and that Arimanius made as many, who were the authors of the opposite evils or vices: that then Oromazes, triplicating himself, removed as far from the sun as the sun is from the earth, and adorned the heaven with stars, appointing the dog-star for their guardian and leader: that he also created 24 other gods, and inclosed them in an egg; but Arimanius having also made an equal number, these last perforated the egg, by which means evil and good became mixed together. However, the fatal time will come, when Arimanius, the introducer of plagues and famine, must be of necessity utterly destroyed by the former, and annihilated; then the earth being made plain and even, mankind shall live in a happy state, in the same manner, in the same political society, and using one and the same language. Theopompus writes, that, according to the Magians, the said two gods, during the space of 3000 years, alternately conquer, and are conquered; that for other 3000 years, they will wage mutual war, fight, and destroy the works of each other, till at last Hades (or the evil spirit) shall perish, and men become perfectly happy, their bodies needing no food, nor casting any shadow, i. e. being perfectly transparent.

ARIMASPI, (Pliny), a people of Sarmatia Europea, to the south of the Montes Riphæi, said by Mele to have but one eye; a fable broached by Aristeas Proconnesius, according to Herodotus.

ARIMATHEA, a town of Judea, (Evangelists); thought to be the same with *Ramatha*, 1 Sam. i. and thus in the tribe of Ephraim, (Wells).—This place is now called *Ramla*; and is in a very ruinous state, containing nothing but rubbish within its boundaries. The Aga of Gaza resides here in a Serai, the floors and walls of which are tumbling down. He maintains about one hundred horsemen, and as many Barbary soldiers, who (says Mr Volney) are lodged in an old Christian church, the nave of which is used as a stable, and in an ancient kan, which is disputed with them by the scorpions. The adjacent country is planted with lofty olive trees, disposed in quincunxes. The greatest part of them are as large as the walnut trees of France; but they are daily perishing through age, the ravages of contending factions, and even from secret mischief; for, in these countries, when a peasant would revenge himself of his enemy, he comes by night, and saws or cuts his trees close to the ground, and the wound, which he takes care to cover, draining off the sap like an issue, the olive tree languishes and dies. Amid these plantations, we meet, at every step, with dry wells, cisterns fallen in, and vast vaulted reservoirs, which prove that, in ancient times, this town must have been upwards of a league and a half in circumference. At present it scarcely contains two hundred families. The little land which is cultivated, by a few of them, belongs to the Mufti, and two or three persons related to him. The rest content themselves with spinning cotton, which is chiefly purchased by two

French houses established there. The only remarkable antiquity at Ramla is the minaret of a ruined mosque on the road to Yafa, which is very lofty; and by an Arabic inscription appears to have been built by the Sultan Saladin.

ARIMINUM, a town of Umbria, or Romagna, at the mouth of the Ariminus, on the Gulph of Venice. The seizing on it by Cæsar gave rise to the civil war, Now called *Rimini*, E. Long. 13. 30. Lat. 44. 8.

ARIOLI, in antiquity, a kind of prophets, or religious conjurers, who by abominable prayers, and horrible sacrifices at the altars of idols, procured answers to their questions concerning future events. *Ibid. Orig. lib. viii. cap. 9.* These are also called *barioli*, and their operation *bariolation*. Sometimes they were denominated *aruspices*, or *haruspices*. The *arioli* were distinguished by a slovenly dress, disorderly and matted beards, hair, &c.

ARION, an excellent musician and poet, inventor of dithyrambics. Periander entertained him at his court, where getting an estate, and returning to Corinth, the sailors, for lucre of his money, threw him into the sea; when, according to the poets, a dolphin, charmed with his music, took him on her back and carried him safe to shore.

ARION, an admirable horse, much more famous in poetic history than Bucephalus in that of Alexander. Authors speak variously of his origin, though they agree in giving him a divine one. His production is most commonly ascribed to Neptune. This god, according to some, raised him out of the ground by a stroke of his trident: according to others, he begot him upon the body of the fury Erynny; according to others, upon that of Ceres, whom he ravished in the form of a horse, she having previously assumed the form of a mare to elude his pursuit. This horse was nursed by the Nereids; and being sometimes yoked with the sea-horses of Neptune to the chariot of this god, he drew him with incredible swiftness through the sea. He had this singularity in him, that his right feet resembled those of a man. Neptune gave him to Capreus king of Haliartus. Capreus made a present of him to Hercules; who mounted him when he took the city of Elis, gained the prize with him in the race against Cygnus the son of Mars near Træcena, and at last made a present of him to Adrastus. It is under this last master that Arion has signalized himself the most: he won the prize for racing at the Nemæan games, which the princes who went to besiege Thebes instituted in the honour of Archemorus; and was the cause that Adrastus did not perish in this famous expedition as all the other chiefs did.

ARIOSTO (Lodovico), the famous Italian poet, and author of Orlando Furioso, was born at the castle of Reggio in Lombardy in 1474. His father, who was major-domo to Duke Hercules, lived to the extent of his fortune, so left but little at his death. Ariosto, from his childhood, showed great marks of genius, especially in poetry; and wrote a comedy in verse on the story of Pyramus and Thisbe, which his brothers and sisters played. His father being utterly unlearned, and rather regarding profit than his son's inclination, compelled him to study the civil law, in which having plodded some years to no purpose, he quitted it for more pleasing studies; yet often lamented, as Ovid

Ariminum ||
Ariosto.

Ariosto.

* See his
Latin poem,
Ad patrem.

and Petrarch did before him, and our own Milton since*, that his father banished him from the muses. At the age of 24, Ariosto lost his father, and found himself perplexed with family-affairs. However, in about six years he was, for his good parts, taken into the service of Don Hippolito, cardinal of Este. At this time he had written nothing but a few sonnets; but now he resolved to make a poem, and chose Bayardo's *Orlando Inamorato* for a ground-work. However, he was prevented writing for a great many years, and was chosen as a fit person to go on an embassy to Pope Julio II. where he gave such satisfaction, that he was sent again, underwent many dangers and difficulties, and at his return was highly favoured. Then, at his leisure, he again applied himself to his poem: but, soon after, he incurred the cardinal's displeasure for refusing to accompany him into Hungary; by which he was so discouraged, that he deferred writing for 14 years, even till the cardinal's death. After that, he finished by degrees, in great perfection, that which he began with great expectation. Duke Astolfo offered him great promotions if he would serve him; but preferring liberty to grandeur, he refused this and other great offers from princes and cardinals, particularly from Leo X. from all whom he received notwithstanding great presents. The Duke of Ferrara delighted so much in his comedies, of which he wrote five, that he built a stage on purpose to have them played in his court, and enabled our poet to build himself a house in Ferrara, with a pleasant garden, where he used to compose his poems, which were highly esteemed by all the princes in Italy, who sent him many presents; but he said, "he would not sell his liberty for the best cardinal's hat in Rome." It was but a small, though convenient house: being asked, why he had not built it in a more magnificent manner, since he had given such noble descriptions of sumptuous palaces, beautiful porticos, and pleasant fountains in his *Orlando Furioso*? he replied, That words were cheaper laid together than stones. Upon the door was the following inscription:

*Parva, sed apta mihi, sed nulli obnoxia, sed non
Sordida, parva meo sed tamen ære, domus.*

Which Mr Harrington thus translates:

This house is small, but fit for me, but hurtful unto none;
But yet not sluttish, as you see; yet paid for with mine own.

In his diet he was temperate, and so careless of dainties, that he was fit to have lived in the world when they fed upon acorns. Whether he was ever married, is uncertain. He kept company with one Alexandria, to whom it was reported he was married privately, and a lady Genevera, whom he slyly mentions in the 24th book of his *Orlando*, as poets are apt to intermix with their fictions some real amours of their own. He was urged to go ambassador to pope Clement, but would by no means accept this embassy. He translated the *Menecmi* of Plautus: and all his own comedies were so esteemed, that they were frequently acted by persons of the first quality; and when his Lena was first represented, Ferdinand of Este, afterwards Marquis of Massa, so far honoured the piece as to speak the prologue. He began one of his comedies in his father's lifetime, when the following incident shows the remarkable talent he had for poetry. His father one day rebuked him sharply, charging him with some

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great fault; but all the while he returned him no answer. Soon after, his brother began on the same subject; but he easily refuted him, and, with strong arguments, justified his own behaviour. "Why then (said his brother) did you not satisfy my father?" "In truth (said Ludivico) I was thinking of a part in my comedy; and methought my father's speech to me was so suited to the part of an old man's chiding his son, that I forgot I was concerned in it myself, and considered it only to make it a part of my play." It is also reported of Ariosto, that coming by a potter's shop, he heard him singing a stave out of his *Orlando*, with so bad a grace, that, out of all patience, he broke with his stick several of his pots. The potter in a pitiful tone, asking what he meant by wronging a poor man that had never injured him? "You rascal (he replied), I have not done thee half the wrong thou hast done me: for I have broken but two or three pots of thine, not worth so many halfpence; whereas thou hast broken and mangled a stanza of mine worth a mark of gold."

Ariosto was tall, of a melancholy complexion, and so absorbed in study and meditation, that he often forgot himself. His picture was drawn by Titian in a masterly manner. He was honoured with the laurel by the hands of the emperor Charles V. He was naturally affable, always assuming less than was his due, yet never putting up with a known injury even from his superiors. He was so fearful on the water, that, whenever he went out of a ship, he would see others go before him; and, on land, he would alight from his horse on the least apprehension of danger. He was of an amorous disposition, and left two natural sons. He enjoyed the friendship of the most eminent men of learning of his time, most of whom he mentions with great respect in the last canto of his *Orlando Furioso*. His constitution was but weakly, so that he was obliged to have recourse to physicians the greatest part of his life. He bore his last sickness with great resolution and serenity; and died at Ferrara the 8th of July 1533, according to Sir John Harrington, being then 59 years of age. He was interred in the church of the Benedictine monks, who, contrary to their custom, attended his funeral. He had a bust erected to him, and the following epitaph written by himself, inscribed upon his tomb:

Ludovici Ariosti humantur ossa
Sub hoc marmore, seu sub hac humo, seu
Sub quidquid voluit benignus hæres,
Sive hærede benignior comes, seu
Opportunius incidens viator:
Nam scire haud potuit futura; sed nec
Tanti erat, vacuum sibi cadaver
Ut urnam cuperet parare.
Vivens ista tamen sibi paravit,
Quæ scribi voluit suo sepulchro,
Olim si quod haberet id sepulchrum:
Ne cum spiritus hoc brevi peracto
Prescripto spatio miscellos artus,
Quos ægre ante reliquerat, reposcet,
Hac et hac cinerem huc et huc revellem
Dum noscat proprium, diu vagetur.

ARIPO, a strong town of Asia, on the western coast of the island of Ceylon, at the mouth of the river Sarunda. It belongs to the Dutch; and to the east

N n

Ariosto,
Ariapo.

Arifba of it is a bank, where they fish for pearls. E. Long. 80. 25. N. Lat. 8. 42.

ARISBA (anc. geog.), a town of the island of Lesbos (Herodot.)—Another of Troas on the continent, in the territory and to the south-east of Abydos (Polyb.): the rendezvous of Alexander's army after the passage of the Hellespont (Arrian); a colony of the Mitylenians (Stephanus); taken and plundered by Achilles (Virgil). The residence of Axylus, celebrated by Homer for his hospitality, which gained him the character of Friend of mankind.

ARISH, a Persian long measure, containing about 38 English inches.

ARISI, the Indian name for the plant which produces the rice. See **ORYZA**.

ARISTA, or **AWN**, among botanists, a long needle-like beard, which stands out from the husk of a grain of corn, grass, &c.

ARISTÆUS, son of Apollo and Cyrene, whom, for the many services he had rendered to mankind by his knowledge of all profitable arts, the gods placed amongst the stars; so that he is the Aquarius in the zodiac. The resemblance of his history to that of Moses has been curiously discussed by Huetius.

ARISTANDER, a famous soothsayer under Alexander the Great, over whom he gained a wonderful influence by the good success of his art. He had already had the same employment at the court of king Philip; and it was he who explained better than his brethren the dream that this prince had after having married Olympias.

ARISTARCHUS, a Grecian philosopher of Samos, one of the first that maintained that the earth turns upon its own centre. We are not sure of the age in which he lived; and have none of his works but a *Treatise of the greatness and distance of the Sun and Moon*, translated into Latin by Frederic Commandine, and published with Pappus's explanations in 1572.

ARISTARCHUS, a celebrated grammarian, much esteemed by Ptolemy Philometor, who committed to him the education of his son. He applied himself chiefly to criticism, and made a revival of Homer's poems, but in too magisterial a way; for such verses as he did not like, he treated as spurious. He commented on other poets. Cicero and Horace made use of his name to express a very rigid critic.

ARISTIDA, in botany: A genus of the triandria digynia class: and, in the natural method, ranking under the 4th order, *Gramina*. The calyx has a double valve; the corolla has one valve, and three awns at the points. There are three species of Aristida, viz. the adscensionis, a native of the island of Ascension; the Americana, a native of Jamaica; and the plumosa, a native of America.

ARISTIDES, surnamed the *Just*, flourished at Athens at the same time with Themistocles, who triumphed over him by his boisterous eloquence, and got him banished, 483 years before Christ, (See **OSTRACISM**): but Aristides being recalled a short time after, would never join with the enemies of Themistocles to get him banished; for nothing could make him deviate from the strictest rules of moderation and justice. Aristides brought the Greeks to unite against the Persians; distinguished himself at the famous battle of Marathon, and that of Salamine and Platea; and esta-

blished an annual income of 460 talents for a fund to supply the expences of war. This great man died so poor, though he had the management of the revenues of Greece, that the state was obliged to pay his funeral expences, to give fortunes to his daughters in marriage, and a maintenance to his son Lyfimachus.

ARISTIDES of Miletus, a famous Greek author, often cited by the ancients.

ARISTIDES, a very eloquent Athenian orator, who became a convert to the Christian religion, and about the year 124 presented to the emperor Adrian an apology for the Christians.

ARISTIDES (*Ælius*), a celebrated orator, born in Mysia, about 129 years before the Christian æra. The best edition of his works is that of Oxford, printed in Greek and Latin, in two volumes quarto.

ARISTIDES, a painter cotemporary with Apelles, flourished at Thebes about the 122d Olympiad. He was the first, according to Pliny, who expressed character and passion, the human mind, and its several emotions; but he was not remarkable for softness of colouring. "His most celebrated picture was of an infant (on the taking of a town) at the mother's breast, who is wounded and expiring. The sensations of the mother were clearly marked, and her fear lest the child, upon failure of the milk, should suck her blood." "Alexander the Great (continues the same author) took this picture with him to Pella."

Junius (in his *Treatise de Picturâ Veterum*) conjectures that the following beautiful epigram of *Æmilianus* was written on this exquisite picture:

ΕΛΛΙ, τάλαν, παρὰ μητρος οὐκ ἐτι μάζον ἀμείλεις.
Ελευσάν ὑστάτιον γάμα κατὰ φθιμένης.
Ἦ δὲ γὰρ ξιφίσσαι λιποπνοὸς ἀλλὰ πὰ μητρος
Φίλτρα καὶ τὴν αἰδὴ παιδοκομῆν ἰμάζον,

Elegantly translated thus:

Suck, little wretch, while yet thy mother lives,
Suck the last drop her fainting bosom gives.
She dies! her tenderness survives her breath,
And her fond love is provident in death.

Webb's Inquiry, dial. vii. p. 161.

ARISTIPPUS, the founder of the Cyrenaic sect of philosophy, was the son of Aretades, and born at Cyrene in Lybia. He flourished about the 96th Olympiad. The great reputation of Socrates induced him to leave his own country, and remove to Athens, that he might have the satisfaction of hearing his discourses. He was chiefly delighted with those discourses of Socrates that related the most to pleasure; which he asserted to be the ultimate end in which all happiness consists. His manner of life was agreeable to his opinion; for he indulged himself extremely in all the luxuries of dress, wine, and women. Though he had a good estate, and three country seats, yet he was the only one of the disciples of Socrates who took money for teaching; which being observed by the philosopher, he asked Aristippus, How he came to have so much? Who in reply asked him, How he came to have so little? Upon his leaving Socrates, he went to Ægina, as Athenæus informs us, where he lived with more freedom and luxury than before. Socrates sent frequent exhortations to him, in order to reclaim him; but all in vain; and with the same view he published that discourse

Aristippus, course which we find in Xenophon. Here Aristippus became acquainted with Lais, the famous courtesan of Corinth; for whose sake he took a voyage to that city. He continued at Ægina till the death of Socrates, as appears from Plato's *Phædo*, and the epistle which he wrote upon that occasion. He returned at last into his own country Cyrene, where he professed philosophy, and instituted a sect which, as we observed above, was called the *Cyrenaic*, from the place, and by some writers the *Hedonic* or voluptuous, from its doctrines. During the height of the grandeur of Dionysius the Sicilian tyrant, a great many philosophers resorted to him; and among the rest Aristippus, who was tempted thither by the magnificence of that court. Dionysius asking him the reason of his coming, he replied, "That it was in order to give what he had, and to receive what he had not:" or, as others represent it, "That when he wanted wisdom, he went to Socrates; but now as he wanted money, he was come to him." He very soon insinuated himself into the favour of Dionysius; for being a man of a soft easy temper, he conformed himself exactly to every place, time, and person, and was a complete master of the most refined complaisance.

We have several remarkable passages concerning him during his residence at that court mentioned by Diogenes Laertius. Dionysius, at a feast, commanded that all should put on womens purple habits, and dance in them. But Plato refused, repeating these lines:

I cannot in this gay effeminate dress
Disgrace my manhood, or my sex betray.

But Aristippus readily submitted to the command, and made this reply immediately:

— At feasts, where mirth is free,
A sober mind can never be corrupted.

At another time, interceding with Dionysius in behalf of a friend, but not prevailing, he cast himself at his feet: being reproved by one for that excess of humility, he replied, "That it was not he who was the cause of that submission; but Dionysius, whose ears were in his feet." Dionysius showed him three beautiful courtesans, and ordered him to take his choice. Upon which he took them all three away with him, alleging that Paris was punished for preferring one to the other two: but when he had brought them to his door, he dismissed them, in order to show that he could either enjoy or reject with the same indifference. Having desired money of Dionysius, the latter observed to him, that he had assured him a wise man wanted nothing. "Give me (says he) what I ask, and we will talk of that afterwards." When Dionysius had given it him, "Now (says he), you see I do not want." By this complaisance he gained so much upon Dionysius, that he had a greater regard for him than for all the rest of the philosophers, though he sometimes spoke with such freedom to that king, that he incurred his displeasure. When Dionysius asked, Why philosophers haunted the gates of rich men, but not rich men those of philosophers? he replied, "Because the latter know what they want, and the others not." Another time, Dionysius repeating (out of Sophocles, as Plutarch affirms, who ascribes this to Zeno) these verses,

He that with tyrants seeks for bare support,
Enslaves himself, though free he came to court;

Aristippus,

he immediately answered,

He is no slave, if he be free to come.

Diocles, as Laertius informs us, related this in his *Lives of the Philosophers*; though others ascribe this saying to Plato. Aristippus had a contest with Antisthenes the Cynic philosopher; notwithstanding which, he was very ready to employ his interest at court for some friends of Antisthenes, to preserve them from death, as we find by a letter of his to that philosopher. Diogenes followed the example of his master Antisthenes in ridiculing Aristippus, and called him the *court spaniel*.

We have many apophthegms of his preserved. Suidas observes, that he surpassed all the philosophers in the acuteness of his apophthegms. Being once railed at, he left the room; and the person who abused him, following him, and asking him why he went away, he answered, "Because it is in your power to rail, but it is not in my power not to hear you." A person observing, that the philosophers frequented the houses of rich men; "Why (says he), the physicians frequent the chambers of the sick, yet that is no reason why a man should rather choose to lie sick than be cured. To one who boasted of his great reading, he said, "That as they who feed and exercise most are not always more healthy than they who only eat and exercise to satisfy nature; so neither they who read much, but they who read no more than is useful, are truly learned." Among other instructions which he gave to his daughter Arete, he advised her particularly to despise superfluity. To one who asked him what his son would be the better for being a scholar? "If for nothing else (said he), yet for this alone, that when he comes into the theatre, one stone will not fit upon another." When a certain person recommended his son to him, he demanded 500 drachmas; and upon the father's replying, that he could buy a slave for that sum, "Do so (said he), and then you'll be master of a couple." Being reproached, because, having a suit of law depending, he fee'd a lawyer to plead for him, "Just so (said he), when I have a great supper to make, I always hire a cook." Being asked what was the difference between a wise man and a fool, he replied, "Send both of them together naked to those who are acquainted with neither of them, and then you'll know." Being reproved by a certain person (who, according to Mr Stanley, was Plato) for his costly and voluptuous feast, "I warrant you (said he), that you would not have bestowed three farthings upon such a dinner;" which the other confessing, "Why, then (said he), I find myself less indulgent to my palate than you are to your covetous humour;" or, as it is otherwise represented, "I find, that I love my belly, and you love your money." When Simus, treasurer to Dionysius, showed him his house magnificently furnished, and paved with costly marble, (for he was a Phrygian, and consequently profuse); Aristippus spit in his face: upon which the other growing angry, "Why, truly (said he), I could not find a fitter place." His servant carrying after him a great weight of money, and being ready to sink upon the

Aristippus. road under his burden, he bid him throw away all that was too much for him to carry. Horace mentions this fact in his third satire of the second book :

Quid simile isti
Græcus Aristippus? qui servos projicere aurum
In media jussit Libya, quia tardius irent
Propter onus segnes.

Being asked, what things were most proper for children to be instructed in? he answered, "Those which might prove of the greatest advantage to them when they came to be men." Being reproached for going from Socrates to Dionysius, he replied, "That he went to Socrates when he wanted serious instruction, and to Dionysius for diversion." Having received money of Dionysius at the same time that Plato accepted a book only, and being reproached for it, "The reason is plain (says he), I want money, and Plato wants books." Having lost a considerable farm, he said to one who seemed excessively to compassionate his loss, "You have but one field; I have three left: why should not I rather grieve for you?" Plutarch, who relates this in his book *De Tranquillitate Animi*, observes upon it, that it is very absurd to lament for what is lost, and not to rejoice for what is left. When a person told him, "That the land for his sake was lost," he replied, "That it was better so, than that he should be lost for the land." Being cast by shipwreck ashore on the island of Rhodes, and perceiving mathematical schemes and diagrams drawn upon the ground, he said, "Courage, friends; for I see the footsteps of men."

After he had lived a long time with Dionysius, his daughter Arete sent to him, to desire his presence at Cyrene, in order to take care of her affairs, since she was in danger of being oppressed by the magistrates. But he fell sick in his return home, and died at Lipara, an Æolian island. With regard to his principal opinions; like Socrates, he rejected the sciences as they were then taught, and pretended that logic alone was sufficient to teach truth and fix its bounds. He asserted, that pleasure and pain were the criterions by which we were to be determined; that these alone made up all our passions; that the first produced all the soft emotions, and the latter all the violent ones. The assemblage of all pleasure, he asserted, made true happiness, and that the best way to attain this was to enjoy the present moments. He wrote a great many books: particularly the history of Libya, dedicated to Dionysius; several Dialogues; and four books of the Luxury of the Ancients. There are four epistles of his extant in the Socratic Collection published by Leo Allatius,

Besides Arete his daughter, whom he educated in philosophy, Aristippus had also a son, whom he disinherited for his stupidity. Arete had a son, who was named *Aristippus* from his grandfather, and had the surname of *Μητροδιδάκτορ* from his mother's instructing him in philosophy. Among his auditors, besides his daughter Arete, we have an account of Æthiops of Ptolemais, and Antipater of Cyrene. Arete communicated the philosophy which she received from her father to her son Aristippus, who transmitted it to Theodorus the Atheist, who instituted the sect called *Theodorean*. Antipater communicated the philosophy of Aristippus to Epitimesdes his disciple; E-

pitimesdes to Paræbates; Paræbates to Hegesias and Anniceris; and these two last improving it by some additions of their own, obtained the honour each of them of giving a name to the *Hegesiac* and *Annicerian* sect.

Laertius mentions two other persons of the name of Aristippus; one, who wrote the History of Arcadia; the other a philosopher of the New Academy.

ARISTO, a Stoic philosopher, the disciple of Zeno the chief of the Stoics, flourished about 290 years before the Christian æra. He differed but little from his master Zeno. He rejected logic as of no use, and natural philosophy as being above the reach of the human understanding. It is said, that being bald, the sun burnt his head; and that this caused his death.—There is a saying of his recorded, which might render the doctrine of Aristippus less odious than it ordinarily is: (see ARISTIPPUS). He used to say, "That a philosopher might do those of his hearers a prejudice who put a wrong interpretation upon good meanings; as for example, that the school of Aristippus might send out debauchees, and that of Zeno, Cynics:" which seems to imply, that the doctrine of this philosopher never produced this effect but when it was misunderstood. He should also have added, that every teacher is therefore obliged to forbear laying down ambiguous maxims, or to prevent false glosses being put upon them.

ARISTO (Titus), a Roman lawyer, perfect master of the public and civil law, of history and antiquity. The Pandects mention some books of his, as does Aulus Gellius. He was cotemporary with Pliny the younger, who gives him a noble character, and had a most tender friendship for him. See *Plinii Epist.* lib. i. ep. 22.

ARISTOCRACY, a form of government where the supreme power is vested in the principal persons of the state. The word is derived from *ἀριστος* *optimus*, and *κράτω* *impero*, "I govern." The ancient writers of politics prefer the aristocratical form of government to all others. The republic of Venice is an aristocracy. Aristocracy seems to coincide with oligarchy; which, however, is more ordinarily used to signify a corruption of an aristocratical state, where the administration is in the hands of too few, or where some one or two usurp the whole power.

ARISTOGITON, a famous Athenian, who, with Armodius, killed Hipparchus tyrant of Athens, about 513 years before the Christian æra. The Athenians erected a statue to him.

ARISTOLOCHIA, BIRTHWORT: A genus of the hexandria order, belonging to the gynandria class of plants; and in the natural method ranking under the 11th order, *Sarmentacea*. It has no calyx: the corolla consists of one entire petal; and the capsule, which is below the flower, has six cells. The species are 21; but only the five following merit description. 1. The rotunda, is a native of the south of France, of Spain, and Italy, from whence the roots are brought for medicinal use. The roots are roundish, grow to the size of small turnips, being in shape and colour like the roots of cyclamens, which are frequently sold instead of them. This sort hath three or four weak trailing branches, which lie on the ground when they are not supported, and extend two feet in length; the leaves are heart-shaped and rounded at their extremity; the flowers.

Aristo
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Aristo-
lochia.

Aristo-
chia.

flowers come out singly at every leaf, toward the upper part of the stalk. They are of a purplish black colour; and are frequently succeeded by oval seed-vessels having six cells full of flat seeds. 2. The longa, is a native of the same countries. This species hath long tap-roots like carrots; the branches are weak and trailing, extending little more than a foot; the flowers come out from the wings of the leaves like the other, are of a pale purple colour, and are frequently succeeded by seed-vessels like the other. 3. The serpentaria, is a native of Virginia and Carolina, from whence the *radix serpentaria*, or snake-root, so much used in medicine, is brought over. The plant rises out of the ground in one, two, and sometimes three plant stalks, which at every little distance are crooked or undulated. The leaves stand alternately, and are about three inches long, in form somewhat like the *smilax aspera*. The leaves grow close to the ground on footstalks an inch long, of a singular shape, and of a dark purple colour. A round canulated capsule succeeds the flower. It is filled with seeds, which are ripe in May. The usual price of the root when dried is 6d. per pound, both in Virginia and Carolina, which is money hardly earned; yet the negro-slaves employ great part of the time allowed them by their masters in search of it, which is the reason that there are seldom found any but very small plants of this species. When they are planted in gardens in those countries where they are natives, the plants increase so much in two years time, that the hand can scarce grasp the stalks of a single one. This species delights in woods, and is usually found near the roots of great trees. 4. The indica, or contrayerva of Jamaica, is a native of that island, where its roots are used instead of the true contrayerva. It hath long trailing branches, which climb upon the neighbouring plants, and sometimes rise to a considerable height. The flowers are produced in small clusters towards the upper part of the stalks, which are of a dark purple colour. 5. The clematitis, with heart-shaped leaves, an upright stem, with the flowers crowded in the axillæ. The root is long and slender.

Culture. The first, second, and third sorts are propagated from seeds, which should be sown in the autumn, in pots filled with light fresh earth, and placed under a frame to preserve them from the frost. If they are plunged into a gentle hot-bed in the month of March, the plants will come up the sooner. In summer, and in autumn when the stalks begin to decay, they must be watered. In winter they must be again sheltered; and in March, before the roots begin to shoot, they must be transplanted into small separate pots filled with light earth, when they may be removed into the open air, and treated as before. The next spring they may be planted in the open air in a warm border; where, in the autumn, when their stalks decay, if the border is covered with old tanner's bark to keep out the frost, the roots will be secured; but where this care is not taken, they will frequently be killed by the frost. The fourth is tender; and therefore must be kept in a stove during the winter, or it will not live in England.

Medicinal uses. The roots of the long and round sorts, on being first chewed, scarce discover any taste, but in a little time prove nauseously bitterish; the long somewhat the least so. The root of the clematitis is long and slender, rarely exceeding the thickness of a

goose-quill: it instantly fills the mouth with an aromatic bitterness, which is not ungrateful. Their medicinal virtues are, to heat, stimulate, attenuate viscid phlegm, and promote the fluid secretions in general: they are principally celebrated in suppressions of female evacuations. The dose in substance is from a scruple to two drams. The long sort is recommended externally for cleansing and drying wounds and ulcers, and in cutaneous diseases.

The root of the serpentaria is small, light, bushy, and consists of a number of strings or fibres, matted together, issuing from one common head; of a brownish colour on the outside, and paler or yellowish within. It has an aromatic smell, like that of valerian, but more agreeable; and a warm, bitterish, pungent taste. This root is a warm diaphoretic and diuretic; it has been greatly celebrated as an alexipharmac, and esteemed one of the principal remedies in malignant fevers and epidemic diseases. In these intentions it is given in substance from 10 to 30 grains, and in infusion to a dram or two. Both watery and spirituous menstrua extract its virtue by infusion, and elevate some share of its flavour in distillation; along with the water a small portion of essential oil arises.

None of these articles, however, are now in so much esteem as formerly; and while all of them are banished from the Pharmacopœia of the London college, the clematitis is alone retained in that of Edinburgh.

ARISTOMENES, a general of the Messenians, renowned for his valour and virtue. See MESSENIÆ.

ARISTOPHANES, a celebrated comic poet of Athens. He was cotemporary with Plato, Socrates, and Euripides; and most of his plays were written during the Peloponnesian war. His imagination was warm and lively, and his genius particularly turned to raillery. He had also great spirit and resolution; and was a declared enemy to slavery, and to all those who wanted to oppress their country. The Athenians suffered themselves in his time to be governed by men who had no other views than to make themselves masters of the commonwealth. Aristophanes exposed the designs of these men, with great wit and severity, upon the stage. Cleo was the first whom he attacked, in his comedy of the *Equites*; and as there was not one of the comedians who would venture to personate a man of his great authority, Aristophanes played the character himself, and with so much success, that the Athenians obliged Cleo to pay a fine of five talents, which were given to the poet. He described the affairs of the Athenians in so exact a manner, that his comedies are a faithful history of that people. For this reason, when Dionysius king of Syracuse desired to learn the state and language of Athens, Plato sent him the comedies of Aristophanes, telling him these were the best representation thereof. He wrote above 50 comedies; but there are only 11 extant which are perfect: these are, *Plutus*, the *Clouds*, the *Frogs*, *Equites*, the *Acharnenses*, the *Wasps*, *Peace*, the *Birds*, the *Ecclesiastæ* or *Female Orators*, the *Thesmophizastæ* or *Priestesses of Ceres*, and *Lystrata*. The *Clouds*, which he wrote in ridicule of Socrates*, is the most celebrated of all his comedies. Madam Dacier tells us, she was so much charmed with this performance, that after she had translated it, and read it over 200 times, it did not become the least tedious to her, which

Aristome-
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Aristopha-
nes.See the
article So-
crates.

Aristophanes
||
Aristotelian.

which she could not say of any other piece; and that the pleasure which she received from it was so exquisite, that she forgot all the contempt and indignation which Aristophanes deserved for employing his wit to ruin a man who was wisdom himself, and the greatest ornament of the city of Athens. Aristophanes having conceived some aversion to the poet Euripides, satirizes him in several of his plays, particularly in his *Frogs* and his *Thesmophoriazusa*. He wrote his *Peace* in the tenth year of the Peloponnesian war, when a treaty for 50 years was concluded between the Athenians and the Lacedæmonians, though it continued but seven years. The *Acharnenses* was written after the death of Pericles, and the loss of the battle in Sicily, in order to dissuade the people from intrusting the safety of the commonwealth to such imprudent generals as Lamachus. Soon after, he represented his *Aves* or *Birds*; by which he admonished the Athenians to fortify Decelæa, which he calls by a fictitious name *Nephelococcygia*. The *Vespæ*, or *Wasps*, was written after another loss in Sicily, which the Athenians suffered from the misconduct of Chares. He wrote the *Lysistrata* when all Greece was involved in a war; in which comedy the women are introduced debating upon the affairs of the commonwealth, when they come to a resolution not to go to bed with their husbands till a peace should be concluded. His *Plutus*, and other comedies of that kind, were written after the magistrates had given orders that no person should be exposed by name upon the stage. He invented a peculiar kind of verse, which was called by his name, and is mentioned by Cicero in his *Brutus*; and Suidas says, that he also was the inventor of the tetrameter and octameter verse.

Aristophanes was greatly admired among the ancients, especially for the true Attic elegance of his style. The time of his death is unknown; but it is certain he was living after the expulsion of the tyrants by Thrasybulus, whom he mentions in his *Plutus* and other comedies. There have been several editions and translations of this poet. Nicodemus Frischin, a German, famous for his classical knowledge, in the 16th century, translated *Plutus*, the *Clouds*, the *Frogs*, the *Equites*, and the *Acharnenses*, into Latin verse. Quintus Septimus Florens rendered into Latin verse the *Wasps*, the *Peace*, and *Lysistrata*; but his translation is full of obsolete words and phrases. Madam Dacier published at Paris in 1692 a French version of *Plutus* and the *Clouds*, with critical notes, and an examination of them according to the rules of the theatre. Mr Lewis Theobald likewise translated these two comedies into English, and published them with remarks. The most noble edition of this author is that published by Ludolphus Kuster, at Amsterdam, in folio, in 1710, and dedicated to Charles Montague Earl of Halifax.

ARISTOTELIA, in antiquity, annual feasts celebrated by the citizens of Stagiris, in honour of Aristotle, who was born there; and in gratitude for his having procured from Alexander the rebuilding and re-peopling of that city, which had been demolished by king Philip.

ARISTOTELIAN, something that relates to the philosopher Aristotle.

ARISTOTELIAN Philosophy, the philosophy taught by Aristotle, and maintained by his followers. The A-

ristotelian is otherwise called the *Peripatetic Philosophy*. See PERIPATETICS.

ARISTOTELIANS, a sect of philosophers, otherwise called *Peripatetics*.

The Aristotelians and their dogmata prevailed for a long while in the schools and universities; even in spite of all the efforts of the Cartesians, Newtonians, and other corpuscularians. But the systems of the latter have at length gained the pre-eminence; and the Newtonian philosophy in particular is now very generally received. The principles of Aristotle's philosophy, the learned agree, are chiefly laid down in the four books *de Calo*; the eight books of *Physical Auscultation*, *φυσικὴ ἀκουστική*, belonging rather to logics or metaphysics than to physics. Instead of the more ancient systems, he introduced matter, form, and privation, as the principles of all things; but he does not seem to have derived much benefit from them in natural philosophy. His doctrines are, for the most part, so obscurely expressed, that it has not yet been satisfactorily ascertained what were his sentiments on some of the most important subjects. He attempted to refute the Pythagorean doctrine concerning the twofold motion of the earth; and pretended to demonstrate, that the matter of the heavens is ungenerated, incorruptible, and subject to no alteration; and he supposed that the stars were carried round the earth in solid orbs. The reader will find a distinct account of the logical part of his philosophy, by Dr Reid professor of moral philosophy in the university of Glasgow, in the second volume of Lord Kames's *Sketches of the History of Man*; and Mr Harris has published a sensible commentary on his *Categories*, under the title of *Philosophical Arrangements*.

ARISTOTLE, the chief of the Peripatetic philosophers, born at Stagira, a small city in Macedon, in the 99th Olympiad, about 384 years before the birth of Christ. He was the son of Nicomachus, physician to Amyntas the grandfather of Alexander the Great. He lost his parents in his infancy; and Proxenus, a friend of his father's, who had the care of his education, taking but little notice of him, he quitted his studies, and gave himself up to the follies of youth. After he had spent most of his patrimony, he entered into the army; but not succeeding in this profession, he went to Delphos to consult the oracle what course of life he should follow; when he was advised to go to Athens and study philosophy. He accordingly went thither about 18 years of age, and studied under Plato till he was 37. By this time he had spent his whole fortune; and we are told that he got his living by selling powders, and some receipts in pharmacy. He followed his studies with most extraordinary diligence, so that he soon surpassed all in Plato's school. He eat little, and slept less; and, that he might not over-sleep himself, Diogenes Laertius tells us, that he lay always with one hand out of the bed, having a ball of brass in it, which, by its falling into a basin of the same metal, awaked him. We are told, that Aristotle had several conferences with a learned Jew at Athens, and that by this means he instructed himself in the sciences and religion of the Egyptians, and thereby saved himself the trouble of travelling into Egypt. When he had studied about 15 years under Plato, he began to

Aristotelians,
Aristotle.

Aristotle. to form different tenets from those of his master, who became highly piqued at his behaviour. Upon the death of Plato, he quitted Athens; and retired to Atarnya, a little city of Mylia, where his old friend Hermias reigned. Here he married Pythias, the sister of this prince, whom he is said to have loved so passionately, that he offered sacrifice to her. Some time after, Hermias having been taken prisoner by Meranon the king of Persia's general, Aristotle went to Mitylene the capital of Lesbos, where he remained till Philip king of Macedon having heard of his great reputation, sent for him to be tutor to his son Alexander, then about 14 years of age: Aristotle accepted the offer; and in eight years taught him rhetoric, natural philosophy, ethics, politics, and a certain sort of philosophy, according to Plutarch, which he taught nobody else. Philip erected statues in honour of Aristotle; and for his sake rebuilt Stagyræ, which had been almost ruined by the wars.

The last fourteen years of his life he spent mostly at Athens, surrounded with every assistance which men and books could afford him for prosecuting his philosophical inquiries. The glory of Alexander's name, which then filled the world, insured tranquillity and respect to the man whom he distinguished as his friend: but after the premature death of that illustrious protector, the invidious jealousy of priests and sophists inflamed the malignant and superstitious fury of the Athenian populace, and the same odious passions which proved fatal to the offensive virtue of Socrates, fiercely assailed the fame and merit of Aristotle. To avoid the cruelty of persecution, he secretly withdrew himself to Chalcis in Eubœa. This measure was sufficiently justified by a prudent regard to his personal safety; but lest his conduct should appear unmanly, when contrasted with the firmness of Socrates in a similar situation, he condescended to apologize for his flight, by saying, that he was unwilling to afford the Athenians a second opportunity "to sin against philosophy." He seems to have survived his retreat from Athens only a few months; vexation and regret probably ended his days.

Besides his treatises on philosophy, he wrote also on poetry, rhetoric, law, &c. to the number of 400 treatises, according to Diogenes Laertius; or more, according to Francis Patricius of Venice. An account of such as are extant, and of those said to be lost, may be seen in Fabricius's *Bibliotheca Græca*. He left his writings with Theophrastus, his beloved disciple and successor in the Lyceum; and forbade that they should ever be published. Theophrastus, at his death, trusted them to Neleus his good friend and disciple; whose heirs buried them in the ground at Scepsis, a town of Troas, to secure them from the king of Pergamus, who made great search every where for books to adorn his library. Here they lay concealed 160 years, until, being almost spoiled, they were sold to one Apellicon, a rich citizen of Athens. Sylla found them at this man's house, and ordered them to be carried to Rome. They were some time after purchased by Tyrannion a grammarian: and Andronicus of Rhodes having bought them of his heirs, was in a manner the first restorer of the works of this great philosopher: for he not only repaired what had been decayed by time and ill keeping, but also put them in a better order, and got them copied. There were many who followed the

doctrine of Aristotle in the reigns of the 12 Cæsars, and their numbers increased much under Adrian and Antoninus: Alexander Aphrodisius was the first professor of the Peripatetic philosophy at Rome, being appointed by the emperors Marcus Aurelius and Lucius Verus; and in succeeding ages the doctrine of Aristotle prevailed among almost all men of letters, and many commentaries were written upon his works.

The first doctors of the church disapproved of the doctrine of Aristotle, as allowing too much to reason and sense; but Anatolius bishop of Laodicea, Didymus of Alexandria, St Jerome, St Augustin, and several others, at length wrote and spoke in favour of it. In the sixth age, Boethius made him known in the west, and translated some of his pieces into Latin. But from the time of Boethius to the eighth age, Joannes Damascenus was the only man who made an abridgement of his philosophy, or wrote any thing concerning him. The Grecians, who took great pains to restore learning in the 11th and following ages, applied much to the works of this philosopher, and many learned men wrote commentaries on his writings: amongst these were Alfarabius, Algazel, Avicenna, and Averroes. They taught his doctrine in Africa, and afterwards at Cordova in Spain. The Spaniards introduced his doctrine into France, with the commentaries of Averroes and Avicenna; and it was taught in the university of Paris, until Amauri having supported some particular tenets on the principles of this philosopher, was condemned of heresy, in a council held there in 1210, when all the works of Aristotle that could be found were burnt, and the reading of them forbidden under pain of excommunication. This prohibition was confirmed, as to physics and metaphysics, in 1215, by the pope's legate; though at the same time he gave leave for his logic to be read, instead of St Augustin's used at that time in the university. In the year 1265, Simon, cardinal of St Cecil, and legate from the holy see, prohibited the reading of the physics and metaphysics of Aristotle. All these prohibitions, however, were taken off in 1366; for the cardinals of St Mark and St Martin, who were deputed by Pope Urban V. to reform the University of Paris, permitted the reading of those books which had been prohibited: and in the year 1448, Pope Stephen approved of all his works, and took care to have a new translation of them into Latin.

ARISTOXENUS, the most ancient musical writer, of whose works any tracts are come down to us. He was born at Tarentum, a city in that part of Italy called *Magna Græcia*, now Calabria. He was the son of a musician, whom some call *Mnesias*, others *Spintharus*. He had his first education at Mantinea, a city of Arcadia, under his father, and Lampyrus of Erythræ; he next studied under Xenophilus, the Pythagorean; and lastly under Aristotle, in company with Theophrastus. Suidas, from whom these particulars are transcribed, adds, that Aristoxenus, enraged at Aristotle having bequeathed his school to Theophrastus, traduced him ever after. But Aristocles the Peripatetic in Eusebius, exculpates Aristoxenus in this particular, and assures us that he always spoke with great respect of his master Aristotle. From the preceding account it appears that Aristoxenus lived under Alexander the Great and his first successors. His *Harmo-*

Aristotle,
Aristoxenus.

Aristoxe-
nus.

nics in three books, all that are come down to us, together with Ptolemy's Harmonics, were first published by Gogavinus, but not very correctly, at Venice, 1562, in 4to, with a Latin version. John Meursius next translated the three books of Aristoxenus into Latin, from the MS. of Jos. Scaliger; but according to Meibomius, very negligently. With these he printed at Leyden, 1616, 4to, Nicomachus and Alypius, two other Greek writers on music. After this, Meibomius collected these musical writers together; to which he added Euclid, Bacchius senior, Aristides Quintilianus; and published the whole, with a Latin version and notes from the elegant press of Elzevir, Amst. 1652.

Aristoxe-
nus.

The learned editor dedicates these ancient musical treatises to Christina queen of Sweden. Aristoxenus is said by Suidas to have written 452 different works, among which those on music are the most esteemed; yet his writings on other subjects are very frequently quoted by ancient authors, notwithstanding Cicero and some others say that he was a bad philosopher, and had nothing in his head but music. The titles of several of the lost works of Aristoxenus, quoted by Athenæus and others, have been collected by Meursius in his notes upon this author, by Tonsius and Menage, all which Fabricius has digested into alphabetical order.

A R I T H M E T I C,

IS a science which explains the properties of numbers, and shows the method or art of computing by them.

History of Arithmetic.

Knowledge
of numbers
coeval with
the human
race.

At what time this science was first introduced into the world, we can by no means determine. That some part of it, however, was coeval with the human race is absolutely certain. We cannot conceive how any man endowed with reason can be without some knowledge of numbers. We are indeed told of nations in America who have no word in their language to express a greater number than three; and this they call *patarrarorincouroac*: but that such nations should have no idea of a greater number than this, is absolutely incredible. Perhaps they may compute by threes, as we compute by tens; and this may have occasioned the notion that they have no greater number than three.

But though we cannot suppose any nation, or indeed any single person, ever to have been without some knowledge of the difference between greater and smaller numbers, it is possible that mankind may have subsisted for a considerable time without bringing this science to any perfection, or computing by any regular scale, as 10, 60, &c. That this, however, was very early introduced into the world, even before the flood, we may gather from the following expression in Enoch's prophecy, as mentioned by the apostle Jude: "Behold, the Lord cometh with *ten thousands* of his saints." This shows, that even at that time men had ideas of numbers as high as we have at this day, and computed them also in the same manner, namely by tens. The directions also given to Noah concerning the dimensions of the ark, leave us no room to doubt that he had a knowledge of numbers, and of measures likewise. When Rebekah was sent away to Isaac, Abraham's son, her relations wished she might be the mother of *thousands of millions*; and if they were totally unacquainted with the rule of multiplication, it is difficult to see how such a wish could have been formed.

It is probable, therefore, that the four fundamental rules of Arithmetic have always been known to some nation or other. No doubt, as some nations, like the Europeans formerly, and the Africans and Americans

now, have been immersed in the most abject and deplorable state of ignorance, they might remain for some time unacquainted with numbers, except such as they had immediate occasion for; and, when they came afterwards to improve, either from their own industry, or hints given by others, might fancy that they themselves, or those from whom they got the hints, had invented what was known long before. The Greeks were the first European nation among whom arithmetic arrived at any degree of perfection. M. Goguet is of opinion, that they first used pebbles in their calculations: a proof of which he imagines is, that the word *ἀριθμός*, which comes from *ἀριθμός*, a little stone, or flint, among other things, signifies *to calculate*. The same, he thinks, is probable of the Romans; and derives the word *calculation* from the use of little stones (*calculi*) in their first arithmetical operations.

If this method, however, was at all made use of, it must have been but for a short time, since we find the Greeks very early made use of the letters of the alphabet to represent their numbers. The 24 letters of their alphabet taken according to their order, at first denoted the numbers 1, 2, 3, 4, 5, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 100, 200, 300, 400, 500, 600, 700, and 800; to which they added the three following, Ϟ, ϟ, Ϡ, to represent 6, 90, and 900. The difficulty of performing arithmetical operations by such marks as these may easily be imagined, and is very conspicuous from Archimedes's treatise concerning the dimensions of a circle.

The Romans followed a like method; and besides characters for each rank of classes, they introduced others for five, fifty, and five hundred. Their method is still used for distinguishing the chapters of books, and some other purposes. Their numeral letters and values are the following:

I V X L C D M

One, five, ten, fifty, one hundred, five hundred, one thousand.

Any number, however great, may be represented by repeating and combining these according to the following rules:

1st, When the same letter is repeated twice, or oftener, its value is represented as often. Thus II signifies two; XXX thirty, CC two hundred.

2d, When a numeral letter of lesser value is placed after one of greater, their values are added: thus XI signifies

2
Grecian method of computation.

3
Roman Notation.

signifies eleven, LXV sixty-five, MDCXXVIII one thousand six hundred and twenty-eight.

3. When a numeral letter of lesser value is placed before one of greater, the value of the lesser is taken from that of the greater: thus IV signifies four, XL forty, XC ninety, CD four hundred.

Sometimes IJ is used instead of D for 500, and the value is increased ten times by annexing J to the right hand.

Thus IJ signifies 500. Also CIJ is used for 1000
 IJJ 5000 CCJJ for 10000
 IJJJ 50000 CCCJJJJ for 100000

Sometimes thousands are represented by drawing a line over the top of the numeral, V being used for five thousand, L for fifty thousand, CC two hundred thousand.

4
Sexagesimal
Arithmetic.

About the year of Christ 200, a new kind of arithmetic, called *sexagesimal*, was invented, as is supposed, by Claudius Ptolemaeus. The design of it was to remedy the difficulties of the common method, especially with regard to fractions. In this kind of arithmetic, every unit was supposed to be divided into 60 parts, and each of these into 60 others, and so on: hence any number of such parts were called *sexagesimal fractions*; and to make the computation in whole numbers more easy, he made the progression in these also sexagesimal. Thus from one to 59 were marked in the common way: then 60 was called a *sexagesima prima*, or first sexagesimal integer, and had one single dash over it; so 60 was expressed thus I'; and so on to 59 times 60, or 3540, which was thus expressed LIX'. He now proceeded to 60 times 60, which he called a *sexagesima secunda*, and was thus expressed I''. In like manner, twice 60 times 60, or 7200, was expressed by II''; and so on till he came to 60 times 3600, which was a third sexagesimal, and expressed thus I'''. If any number less than 60 was joined with these sexagesimals, it was added in its proper characters without any dash: thus I'XV represented 60 and 15, or 75; I'VXXV is four times 60 and 25, or 265; X''II'XV, is ten times 3600, twice 60 and 15, or 36, 135, &c. Sexagesimal fractions were marked by putting the dash at the foot, or on the left hand of the letter: thus I₆₀, or 'I, denoted $\frac{1}{60}$; I₃₆₀₀, or ''I, $\frac{1}{3600}$ &c.

5
Indian characters
when brought in
to use.

The most perfect method of notation, which we now use, came into Europe from the Arabians, by the way of Spain. The Arabs, however, do not pretend to be the inventors of them, but acknowledge that they received them from the Indians. Some there are indeed, who contend that neither the Arabs nor the Indians were the inventors, but that they were found out by the Greeks. But this is by no means probable; as Maximus Planudes, who lived towards the close of the 13th century, is the first Greek who makes use of them: and he is plainly not the inventor; for Dr Wallis mentions an inscription on a chimney in the Parsonage-house of Helendon in Northamptonshire, where the date is expressed by M^o 133, instead of 1133. Mr Luffkin furnishes a still earlier instance of their use, in the window of a house, part of which is a Roman wall, near the market-place in Colchester; where between two carved lions stands an escutcheon with the figures 1090. Dr Wallis is of opinion that

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these characters must have been used in England at least as long ago as the year 1050, if not in ordinary affairs, at least in mathematical ones, and in astronomical tables. How these characters came to be originally invented by the Indians we are entirely ignorant.

The introduction of the Arabian characters in notation did not immediately put an end to the sexagesimal arithmetic. As this had been used in all the astronomical tables, it was for their sakes retained for a considerable time. The sexagesimal integers went first out, but the fractions continued till the invention of decimals.

The oldest treatises extant upon the theory of arithmetic are the seventh, eighth, and ninth books of Euclid's *Treatises on Arithmetic*, where he treats of proportion and of prime and composite numbers; both of which have received improvements since his time, especially the former. The next of whom we know any thing is Nicomachus the Pythagorean, who wrote a treatise of the theory of arithmetic, consisting chiefly of the distinctions and divisions of numbers into classes, as plain, solid, triangular, quadrangular, and the rest of the figurate numbers as they are called, numbers odd and even, &c. with some of the more general properties of the several kinds. This author is, by some, said to have lived before the time of Euclid; by others, not long after. His arithmetic was published at Paris in 1538. The next remarkable writer on this subject is Boethius, who lived at Rome in the time of Theodoric the Goth. He is supposed to have copied most of his work from Nicomachus.

From this time no remarkable writer on arithmetic appeared till about the year 1200, when Jordanus of Namur wrote a treatise on this subject, which was published and demonstrated by Joannes Faber Stapulensis in the 15th century, soon after the invention of printing. The same author also wrote upon the new art of computation by the Arabic figures, and called this book *Algorismus Demonstratus*. Dr Wallis says this manuscript is in the Savillian library at Oxford, but it hath never yet been printed. As learning advanced in Europe, so did the knowledge of numbers; and the writers on arithmetic soon became innumerable. About the year 1464, Regiomontanus, in his triangular tables, divided the Radius into 10,000 parts instead of 60,000; and thus tacitly expelled the sexagesimal arithmetic. Part of it, however, still remains in the division of time, as of an hour into 60 minutes, a minute into 60 seconds, &c. Ramus in his arithmetic, written about the year 1550, and published by Lazarus Schonerus in 1586, uses decimal periods in carrying on the square and cube roots to fractions. The same had been done before by our countrymen Buckley and Record; but the first who published an express treatise on decimals was Simon Stevinus, about the year 1582. As to the circulating decimals, Dr Wallis is the first who took much notice of them. He is also the author of the *arithmetic of infinites*, which has been very usefully applied to geometry. The greatest improvement, however, which the art of computation ever received, is the invention of logarithms. The honour of this invention is unquestionable due to Lord Napier, baron of Merchiston in Scotland, about the end of the 16th or beginning

O o

Notation
and
Numera-
tion.

beginning of the 17th century. By these means arithmetic has advanced to a degree of perfection which the ancients could never have imagined possible, much less hoped to attain; and we believe it may now be reckoned one of those few sciences which have arrived at their utmost height, and which is in its nature capable of little further improvement.

7

CHAP. I. NOTATION AND NUMERATION.

THE first elements of arithmetic are acquired during our infancy. The idea of one, though the simplest of any, and suggested by every single object, is perhaps rather of the negative kind, and consists partly in the exclusion of plurality, and is not attended to till that of number be acquired. Two is formed by placing one object near another; three, four, and every higher number, by adding one continually to the former collection. As we thus advance from lower numbers to higher, we soon perceive that there is no limit to this increasing operation; and that, whatever number of objects be collected together, more may be added, at least, in imagination; so that we can never reach the highest possible number, nor approach near it. As we are led to understand and add numbers by collecting objects, so we learn to diminish them by removing the objects collected; and if we remove them one by one, the number decreases through all the steps by which it advanced, till only one remain, or none at all. When a child gathers as many stones together as suits his fancy, and then throws them away, he acquires the first elements of the two capital operations in arithmetic. The idea of numbers, which is first acquired by the observation of sensible objects, is afterwards extended to measures of space and time, affections of the mind, and other immaterial qualities.

Small numbers are most easily apprehended: a child soon knows what two and what three is; but has not any distinct notion of seventeen. Experience removes this difficulty in some degree: as we become accustomed to handle larger collections, we apprehend clearly the number of a dozen or a score; but perhaps could hardly advance to an hundred without the aid of classical arrangement, which is the art of forming so many units into a class, and so many of these classes into one of a higher kind, and thus advancing through as many ranks of classes as occasion requires. If a boy arrange an hundred stones in one row, he would be tired before he could reckon them; but if he place them in ten rows of ten stones each, he will reckon an hundred with ease; and if he collect ten such parcels, he will reckon a thousand. In this case, ten is the lowest class, an hundred is a class of the second rank, and a thousand is a class of the third rank.

There does not seem to be any number naturally adapted for constituting a class of the lowest, or any higher rank to the exclusion of others. However, as ten has been universally used for this purpose by the Hebrews, Greeks, Romans, and Arabians, and by all nations who have cultivated this science, it is probably the most convenient for general use. Other scales, however, may be assumed, perhaps on some occa-

sions, with superior advantage; and the principles of arithmetic will appear in their full extent, if the student can adapt them to any scale whatever: thus, if eight were the scale, 6 times 3 would be two classes and two units, and the number 18 would then be represented by 22. If 12 were the scale, 5 times 9 would be three classes and nine units, and 45 would be represented by 39, &c.

It is proper, whatever number of units constitutes a class of the lower rank, that the same number of each class should make one of the next higher. This is observed in our arithmetic, ten being the universal scale: but is not regarded in the various kinds of monies, weights, and the like, which do not advance by any universal measure; and much of the difficulty in the practice of arithmetic arises from that irregularity.

As higher numbers are somewhat difficult to apprehend, we naturally fall on contrivances to fix them in our minds, and render them familiar: but notwithstanding all the expedients we can fall upon, our ideas of high numbers are still imperfect, and generally far short of the reality; and though we can perform any computation with exactness, the answer we obtain is often incompletely apprehended.

It may not be amiss to illustrate, by a few examples, the extent of numbers which are frequently named without being attended to. If a person employed in telling money reckon an hundred pieces in a minute, and continue at work ten hours each day, he will take seventeen days to reckon a million; a thousand men would take 45 years to reckon a billion. If we suppose the whole earth to be as well peopled as Britain, and to have been so from the creation, and that the whole race of mankind had constantly spent their time in telling from a heap consisting of a quadrillion of pieces, they would hardly have yet reckoned the thousandth part of that quantity.

All numbers are represented by the ten following characters.

1	2	3	4	5	6	7	8	9	0
One,	two,	three,	four,	five,	six,	seven,	eight,	nine,	cypher.

The nine first are called *significant figures* or *digits*; and sometimes represent units, sometimes tens, hundreds, or higher classes. When placed singly, they denote the simple numbers subjoined to the characters. When several are placed together, the first or right-hand figure only is to be taken for its simple value: the second signifies so many tens, the third so many hundreds, and the others so many higher classes, according to the order they stand in. And as it may sometimes be required to express a number consisting of tens, hundreds, or higher classes, without any units or classes of a lower rank annexed; and as this can only be done by figures standing in the second, third, or higher place, while there are none to fill up the lower ones; therefore an additional character or cypher (0) is necessary, which has no signification when placed by itself, but serves to supply the vacant places, and bring the figures to their proper station.

The following table shows the names and divisions of the classes.

Addition,	8.	4	3	7.	9	8	2.	5	6	4.	7	3	8.	9	7	2.	6	4	5	
	TRILLIONS					BILLIONS					MILLIONS									
	Hundred thousand of billions					Hundred thousand of millions					Hundred thousand					Hundred				
	Ten thousand of billions					Ten thousand of millions					Ten thousand					Tens				
	Thousand of billions					Thousand of millions					Thousand					Units				
	Hundred billions					Hundred millions					Hundred									
	Ten billions					Ten millions					Ten									
	Hundred billions					Hundred millions					Hundred									
	Ten billions					Ten millions					Ten									
	Hundred billions					Hundred millions					Hundred									

The first six figures from the right hand are called the *unit period*, the next six the *million period*, after which the *trillion*, *quadrillion*, *quintillion*, *sextillion*, *septillion*, *octillion*, and *nonillion* periods follow in their order.

It is proper to divide any number, before we reckon it into periods and half periods, by different marks. We then begin at the left hand, and read the figures in their order, with the names of their places, from the table. In writing any number, we must be careful to mark the figures in their proper places, and supply the vacant places with cyphers.

As there are no possible ways of changing numbers, except by enlarging or diminishing them according to some given rule, it follows, that the whole art of arithmetic is comprehended in two operations, *Addition* and *Subtraction*. However, as it is frequently required to add several equal numbers together, or to subtract several equal ones from a greater, till it be exhausted, proper methods have been invented for facilitating the operation in these cases, and distinguished by the names of *Multiplication* and *Division*; and these four rules are the foundation of all arithmetical operations whatever.

As the idea of number is acquired by observing several objects collected, so is that of fractions by observing an object divided into several parts. As we sometimes meet with objects broken into two, three, or more parts, we may consider any or all of these divisions promiscuously, which is done in the doctrine of vulgar fractions, for which a chapter will be allotted. However, since the practice of collecting units into parcels of tens has prevailed universally, it has been found convenient to follow a like method in the consideration of fractions, by dividing each unit into ten equal parts, and each of these into ten smaller parts; and so on. Numbers divided in this manner are called *Decimal Fractions*.

CHAP. II. ADDITION.

ADDITION is that operation by which we find the amount of two or more numbers. The method of doing this in simple cases is obvious, as soon as the meaning of number is known, and admits of no illustration. A young learner will begin at one of the numbers, and reckon up as many units separately as there are in the other, and practice will enable him to do it at once. It is impossible, strictly speaking, to add more than two numbers at a time. We must first find the sum of the first and second; then we add the third to that number; and so on. However, as the

several sums obtained are easily retained in the memory, it is neither necessary nor usual to mark them down. When the numbers consist of more figures than one, we add the units together, the tens together, and so on. But if the sum of the units exceed ten, or contain ten several times, we add the number of tens it contains to the next column, and only set down the number of units that are over. In like manner we carry the tens of every column to the next higher. And the reason of this is obvious from the value of the places; since an unit, in any higher place, signifies the same thing as ten in the place immediately lower.

Example.

RULE. "Write the numbers distinctly, 346863
"units under units, tens under tens; and 876734
"so on. Then reckon the amount of the 123467
"right-hand column. If it be under ten, 314213
"mark it down. If it exceed ten, mark 712316
"the units only, and carry the tens to the 438987
"next place. In like manner, carry the 279654
"tens of each column to the next, and mark
"down the full sum of the left hand column." 3092234
24433

As it is of great consequence in business to perform addition readily and exactly, the learner ought to practise it till it become quite familiar. If the learner can readily add any two digits, he will soon add a digit to a higher number with equal ease. It is only to add the unit place of that number to the digit; and, if it exceed ten, it raises the amount accordingly. Thus, because 8 and 6 is 14, 48 and 6 is 54. It will be proper to mark down under the sums of each column, in a small hand, the figure that is carried to the next column. This prevents the trouble of going over the whole operation again, in case of interruption or mistake. If you want to keep the account clean, mark down the sum and figure you carry on a separate paper, and, after revising them, transcribe the sum only. After some practice, we ought to acquire the habit of adding two or more figures at one glance. This is particularly useful when two figures which amount to 10, as 6 and 4, or 7 and 3, stand together in the column.

Every operation in arithmetic ought to be revised, to prevent mistakes; and as one is apt to fall into the same mistake, if he revise it in the same manner he performed it, it is proper either to alter the order, or else to trace back the steps by which the operation advanced, which will lead us at last to the number we began with. Every method of proving accounts may be referred to one or other of these heads.

1st, Addition may be proven by any of the following methods: repeat the operation, beginning at the top of the column, if you began at the foot when you wrought it.

2d, Divide the account into several parts; add these separately, and then add the sums together. If their amount correspond with the sum of the account, when added at once, it may be presumed right. This method is particularly proper when you want to know the sums of the parts, as well as that of the whole.

3d, Subtract the numbers successively from the sum; if the account be right, you will exhaust it exactly, and find no remainder.

Addition.

When the given number consists of articles of different value, as pounds, shillings, and pence, or the like, which are called *different denominations*, the operations in arithmetic must be regulated by the value of the articles. We shall give here a few of the most useful tables for the learner's information.

I. *Sterling Money.*

4 Farthings = 1 penny,
marked d.
12 Pence = 1 Shilling, s.
20 Shillings = 1 pound, L.
Also, 6 s. 8 d. = 1 noble
10 s. = 1 angel
13 s. 4 d. or two thirds
of a pound = 1 merk.

Scots money is divided in the same manner as Sterling, and has one twelfth of its value. A pound Scots is equal to 1 s. 8 d. Sterling, a shilling Scots to a penny Sterling, and a penny Scots to a twelfth part of a penny Sterling; a mark Scots is two thirds of a pound Scots, or $13\frac{1}{3}$ d. Sterling.

III. *Troy Weight.*

20 Mites = 1 grain, gr.
24 Grains = 1 pen. wt, dw^t.
20 Penny wts. = 1 ounce, oz.
12 Ounce = 1 pound, lb.

V. *English Dry Measure.*

2 Pints = 1 quart
4 Quarts = 1 gallon
2 Gallons = 1 peck
4 Pecks = 1 bushel
8 Bushels = 1 quarter

VII. *English Land Measure.*

$30\frac{1}{2}$ Square yards = 1 pole
or perch
40 Poles = 1 rood
4 Roods = 1 acre

IX. *Long Measure.*

12 Inches = 1 foot
3 Feet = 1 yard
 $5\frac{1}{2}$ Yards = 1 pole
40 Poles = 1 furlong
8 Furlongs = 1 mile
3 Miles = 1 league.

II. *Averdupoise Weight.*

16 Drams = 1 ounce, oz.
16 Ounces = 1 pound, lb.
28 Pound = 1 quarter, qr.
4 Quart = 1 hun. wgh^t, C.
20 Hun. weight = 1 ton, T.

IV. *Apothecaries Weight.*

20 Grains = 1 scruple, $\mathfrak{s}$
3 Scruples = 1 dram, $\mathfrak{d}$
8 Drams = 1 ounce, $\mathfrak{z}$
12 Ounce = 1 pound, lb

VI. *Scots Dry Measure.*

4 Lippies = 1 peck
4 Pecks = 1 firloft
4 Firlofts = 1 boll
16 Bolls = 1 chaldier

VIII. *Scots Land Measure.*

36 Square ells = 1 fall
40 Falls = 1 rood
4 Roods = 1 acre

X. *Time.*

60 Seconds = 1 minute
60 Minutes = 1 hour
24 Hours = 1 day
7 Days = 1 Week
365 Days = 1 year
52 Weeks & 1 day = 1 year.

RULE for compound Addition. "Arrange like quantities under like, and carry according to the value of the higher place."

Note 1. When you add a denomination, which contains more columns than one, and from which you carry to the higher by 20, 30, or any even number of tens, first add the units of that column, and mark down their sum, carrying the tens to the next column; then add the tens, and carry to the higher denomination, by the number of tens that it contains of the lower. For example, in adding shillings, carry by 10 from the units to the tens, and by 2 from the tens to the pounds.

Note 2. If you do not carry by an even number of tens, first find the complete sum of the lower denomination, then enquire how many of the higher that sum contains, and carry accordingly, and mark the remainder, if any, under the column. For example, if the

sum of a column of pence be 43, which is three shillings and seven pence, mark 7 under the pence column, and carry 3 to that of the shillings.

Note 3. Some add the lower denominations after the following method: when they have reckoned as many as amounts to one of the higher denomination, or upwards, they mark a dot, and begin again with the excess of the number reckoned above the value of the denomination. The number of dots shows how many are carried, and the last reckoned number is placed under the column.

Examples in Sterling Money.

L. 145	6	8	L. 16	9	11 $\frac{1}{2}$
215	3	9	169	16	10
172	18	4	36	12	9 $\frac{1}{2}$
645	7	7	54	7	6
737	2	3	30	—	1 $\frac{1}{2}$
35	3	9	7	19	6
9	—	7	707	19	11
1764	12	3	14	14	4
780	—	—	84	18	8 $\frac{1}{2}$
99	9	9	125	3	7
150	10	—	16	16	8 $\frac{1}{2}$
844	8	7	62	5	3

In Averdupoise Weight.

T.	C.	qr.	lb.	T.	C.	qr.	lb.
1	19	3	26	3	15	2	22
—	14	1	16	6	3	—	19
2	18	1	16	5	7	3	26
—	1	2	27	3	2	2	—
3	9	—	10	4	3	1	10
—	17	2	24	—	18	1	12
—	15	3	18	1	1	1	1
4	6	—	5	5	3	—	7
—	6	3	9	6	4	—	9
6	4	—	4	4	6	—	5
5	5	—	5	2	1	3	4

When one page will not contain the whole account, we add the articles it contains, and write against their sum, *Carried forward*; and we begin the next page with the sum of the foregoing, writing against it, *Brought forward*.

When the articles fill several pages, and their whole sum is known, which is the case in transcribing accounts, it is best to proceed in the following manner: Add the pages, placing the sums on a separate paper; then add the sums, and if the amount of the whole be right, it only remains to find what numbers should be placed at the foot and top of the pages. For this purpose, repeat the sum of the first page on the same line; add the sums of the first and second, placing the amount in a line with the second; to this add the sum of the third, placing the amount in a line with the third. Proceed in like manner with the others; and if the last sum corresponds with the amount of the pages, it is right. These sums are transcribed at the foot of the respective pages, and tops of the following ones.

Ex.

Subtraction.

Example.

L.	L.	L.	L.
L. 134 6 8	L. 170 5 4	L. 70 4 2	L. 15 3 9
42 3 9	66 9 8	18 6 8	12 2 6
175 4 9	73 8 6	12 13 2	7 5 4
42 5 7	45 3 2	15 3 9	8 — —
163 7 4	78 7 9	17 5 4	— 9 6
148 5 8	12 — —	18 6 8	— 5 10
73 2 3			

L.	L.	L.	L.
1st Page, L. 778	16 —	L. 778	16 —
2d,	445 14 5	1224	10 5
3d,	151 19 9	1376	10 1
4th,	43 6 11	1419	17 1

L. 1419 17 1

Then we transcribe L. 778, 16s. at the foot of the first and top of the second pages, L. 1224 : 10 : 5 at the foot of the second and top of the third ; and so on.

9. CHAP. III. SUBTRACTION.

SUBTRACTION is the operation by which we take a lesser number from a greater, and find their differences. It is exactly opposite to addition, and is performed by learners in a like manner, beginning at the greater, and reckoning downwards the units of the lesser. The greater is called the *minuend*, and the lesser the *subtrahend*.

If any figure of the subtrahend be greater than the corresponding figure of the minuend, we add ten to that of the minuend, and having found and marked the difference, we add one to the next place of the subtrahend. This is called *borrowing ten*. The reason will appear, if we consider that, when two numbers are equally increased by adding the same to both, their difference will not be altered. When we proceed as directed above, we add ten to the minuend, and we likewise add one to the higher place of the subtrahend, which is equal to ten of the lower place.

RULE. "Subtract units from units, tens from tens, and so on. If any figure of the subtrahend be greater than the corresponding one of the minuend, borrow ten."

Example. Minuend	173694	738641
Subtrahend	21453	379235
Remainder	152241	359406

To prove subtraction, add the subtrahend and remainder together ; if their sum be equal to the minuend, the account is right.

Or subtract the remainder from the minuend. If the difference be equal to the subtrahend, the account is right.

RULE for compound subtraction. "Place like denominations under like, and borrow, when necessary, according to the value of the higher place."

Examples.

L.	C.	gr.	lb.	A.	R.	F.	E.
L. 146 3 3	12	3	19	15	2	24	18
58 7 6	4	3	24	12	2	36	7
L. 87 15 9	7	3	23	2	3	28	11

Note F. The reason for borrowing is the same as in simple subtraction. Thus in subtracting pence, we

add 12 pence when necessary to the minuend, and at the next step, we add one shilling to the subtrahend.

Note 2. When there are two places in the same denomination, if the next higher contain exactly so many tens, it is best to subtract the units first, borrowing ten when necessary ; and then subtract the tens, borrowing, if there is occasion, according to the number of tens in the higher denomination.

Note 3. If the value of the higher denomination be not an even number of tens, subtract the units and tens at once, borrowing according to the value of the higher denomination.

Note 4. Some chuse to subtract the place in the subtrahend, when it exceeds that of the minuend, from the value of the higher denomination, and add the minuend to the difference. This is only a different order of proceeding, and gives the same answer.

Note 5. As custom has established the method of placing the subtrahend under the minuend, we follow it when there is no reason for doing otherwise ; but the minuend may be placed under the subtrahend with equal propriety ; and the learner should be able to work it either way, with equal readiness, as this last is sometimes more convenient ; of which instances will occur afterwards.

Note 6. The learner should also acquire the habit when two numbers are marked down, of placing such a number under the lesser, that, when added together, the sum may be equal to the greater. The operation is the same as subtraction, though conceived in a different manner, and is useful in balancing accounts, and on other occasions.

It is often necessary to place the sums in different columns, in order to exhibit a clear view of what is required. For instance, if the values of several parcels of goods are to be added, and each parcel consists of several articles, the particular articles should be placed in an inner column, and the sum of each parcel extended to the outer column, and the total added there.

If any person be owing an account, and has made some partial payments, the payments must be placed in an inner column, and their sum extended under that of the account in the outer column, and subtracted there.

An example or two will make this plain.

1st.] 30 yards linen at 2 s.	L. 3
45 ditto a 1 s. 6d.	3 7 6
	— L. 6 7 6
120 lb thread at 4 s.	L. 24
40 ditto at 3 s.	6
30 ditto at 2 s. 6d.	3 15
	— 33 15
	— L. 40 2 6
2d.] 1773.	
Jan. 15. Lent James Smith	L. 50
22. Lent him further	70
	— L. 120
Feb. 3. Received in part	L. 62
5. Received further	
In gold L. 10 10	
In silver 13	
	— 23 10
	— 85 10
Balance due me	L. 34 10

CHAP. IV. MULTIPLICATION.

IN Multiplication, two numbers are given, and it is required to find how much the first amounts to, when reckoned as many times as there are units in the second. Thus, 8 multiplied by 5, or 5 time 8, is 40. The given numbers (8 and 5) are called *factors*; the first (8) the *multiplicand*; the second (5) the *multiplier*; and the amount (40) the *product*.

This operation is nothing else than addition of the same number several times repeated. If we mark 8 five times under each other, and add them, the sum is 40: But, as this kind of addition is of frequent and extensive use, in order to shorten the operation, we mark down the number only once, and conceive it to be repeated as often as there are units in the multiplier.

For this purpose, the learner must be thoroughly acquainted with the following multiplication-table, which is composed by adding each digit twelve times.

Twice	Thrice	Four times	Fivetimes	Six times	Seventimes
1 is 2	1 is 3	1 is 4	1 is 5	1 is 6	1 is 7
2 4	2 6	2 8	2 10	2 12	2 14
3 6	3 9	3 12	3 15	3 18	3 21
4 8	4 12	4 16	4 20	4 24	4 28
5 10	5 15	5 20	5 25	5 30	5 35
6 12	6 18	6 24	6 30	6 36	6 42
7 14	7 21	7 28	7 35	7 42	7 49
8 16	8 24	8 32	8 40	8 48	8 56
9 18	9 27	9 36	9 45	9 54	9 63
10 20	10 30	10 40	10 50	10 60	10 70
11 22	11 33	11 44	11 55	11 66	11 77
12 24	12 36	12 48	12 60	12 72	12 84
Eight times	Nine times	Ten times	Eleven times	Twelve times	
1 is 8	1 is 9	1 is 10	1 is 11	1 is 12	
2 16	2 18	2 20	2 22	2 24	
3 24	3 27	3 30	3 33	3 36	
4 32	4 36	4 40	4 44	4 48	
5 40	5 45	5 50	5 55	5 60	
6 48	6 54	6 60	6 66	6 72	
7 56	7 63	7 70	7 77	7 84	
8 64	8 72	8 80	8 88	8 96	
9 72	9 81	9 90	9 99	9 108	
10 80	10 90	10 100	10 110	10 120	
11 88	11 99	11 110	11 121	11 132	
12 96	12 108	12 120	12 132	12 144	

If both factors be under 12, the table exhibits the product at once. If the multiplier only be under 12, we begin at the unit-place, and multiply the figures in their order, carrying the tens to the higher place, as in addition.

Ex. 76859 multiplied by 4, or 76859 added 4 times.

$$\begin{array}{r} 4 \\ \hline 76859 \\ 76859 \\ 76859 \\ \hline 307436 \end{array}$$

If the multiplier be 10, we annex a cypher to the multiplicand. If the multiplier be 100, we annex two cyphers; and so on. The reason is obvious, from the use of cyphers in notation.

If the multiplier be any digit, with one or more cyphers on the right hand, we multiply by the figure,

and annex an equal number of cyphers to the product. Thus, if it be required to multiply by 50, we first multiply by 5, and then annex a cypher. It is the same thing as to add the multiplicand fifty times; and this might be done by writing the account at large, dividing the column into 10 parts of 5 lines, finding the sum of each part, and adding these ten sums together.

If the multiplier consist of several significant figures, we multiply separately by each, and add the products. It is the same as if we divided a long account of addition into parts corresponding to the figures of the multiplier.

Example. To multiply 7329 by 365.

$$\begin{array}{r} 7329 \quad 7329 \quad 7329 \\ 5 \quad 60 \quad 300 \\ \hline 36645 \quad 439740 \quad 2198700 \\ \hline 2675085 \end{array}$$

It is obvious that 5 times the multiplicand added to 60 times, and to 300 times, the same must amount to the product required. In practice, we place the products at once under each other; and as the cyphers arising from the higher places of the multiplier are lost in the addition, we omit them. Hence may be inferred the following

RULE. "Place the multiplier under the multiplicand, and multiply the latter successively by the significant figures of the former; placing the right-hand figure of each product under the figure of the multiplier from which it arises; then add the product."

$$\begin{array}{r} \text{Ex. } 7329 \quad 42785 \quad 37846 \quad 93956 \\ \quad 365 \quad 91 \quad 235 \quad 8704 \\ \hline 36645 \quad 42785 \quad 189230 \quad 375824 \\ 43974 \quad 385065 \quad 113538 \quad 657692 \\ 21987 \quad 3893435 \quad 75692 \quad 751648 \\ \hline 2675085 \quad 8893810 \quad 817793024 \end{array}$$

A number which cannot be produced by the multiplication of two others is called a *prime number*; as 3, 5, 7, 11, and many others.

A number which may be produced by the multiplication of two or more smaller ones, is called a *composite number*. For example, 27, which arises from the multiplication of 9 by 3; and these numbers (9 and 3) are called the *component parts* of 27.

Contractions and Varieties in Multiplication.

First, If the multiplier be a composite number, we may multiply successively by the component parts.

$$\begin{array}{r} \text{Ex. } 7638 \text{ by } 45 \text{ or } 5 \text{ times } 9 \\ 7638 \text{ 1st, } 5492 \text{ by } 72 \\ 45 \quad 9 \text{ 2d, } 13759 \text{ by } 56 \\ \hline 38190 \quad 3d, 56417 \text{ by } 144 \\ 30552 \quad 68742 \text{ 4th, } 73048 \text{ by } 84 \\ \hline 343710 \quad 5 \text{ 5th, } 166549 \text{ by } 125 \\ \quad 6 \text{ th, } 378914 \text{ by } 54 \\ \quad 7 \text{ th, } 520813 \text{ by } 63 \end{array}$$

Because the second product is equal to five times the first, and the first is equal to nine times the multiplicand,

Multipli-
cation.

plicand, it is obvious that the second product must be five times nine, or forty-five times as great as the multiplicand.

Secondly, If the multiplier be 5, which is the half of 10, we may annex a cypher and divide by 2. If it be 25, which is the fourth part of an 100, we may annex two cyphers, and divide by 4. Other contractions of the like kind will readily occur to the learner.

Thirdly, To multiply by 9, which is one less than 10, we may annex a cypher; and subtract the multiplicand from the number it composes. To multiply by 99,999, or any number of 9's, annex as many cyphers, and subtract the multiplicand. The reason is obvious; and a like rule may be found, though the unit place be different from 9.

Fourthly, Sometimes a line of the product is more easily obtained from a former line of the same than from the multiplicand.

Ex. 1st.] $\begin{array}{r} 1372 \\ 84 \\ \hline 5488 \\ 10976 \\ \hline 115248 \end{array}$	2d.] $\begin{array}{r} 1348 \\ 36 \\ \hline 8088 \\ 4044 \\ \hline 48528 \end{array}$
--	---

In the first example, instead of multiplying by 5, we may multiply 5488 by 2: and, in the second, instead of multiplying by 3, we may divide 8088 by 2.

Fifthly, Sometimes the product of two or more figures may be obtained at once, from the product of a figure already found.

Ex. 1st.] $\begin{array}{r} 14356 \\ 648 \\ \hline 114848 \\ 918784 \\ \hline 9302688 \end{array}$	2d.] $\begin{array}{r} 3462321 \\ 96484 \\ \hline 13849284 \\ 166191408 \\ \hline 332382816 \\ \hline 334058579364 \end{array}$
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In the second example, we multiply first by 4; then, because 12 times 4 is 48, we multiply the first line of the product by 12, instead of multiplying separately by 8 and 4; lastly, because twice 48 is 96, we multiply the second line of the product by 2, instead of multiplying separately by 6 and 9.

When we follow this method, we must be careful to place the right-hand figure of each product under the right-hand figure of that part of the multiplier which it is derived from.

It would answer equally well in all cases, to begin the work at the highest place of the multiplier; and contractions are sometimes obtained by following that order.

Ex. 1st.] $\begin{array}{r} 3125 \\ 642 \\ \hline 18750 \\ 12500 \\ 6250 \\ \hline 2006250 \end{array}$	or $\begin{array}{r} 3125 \\ 642 \\ \hline 18750 \\ 131250 \\ \hline 2006250 \end{array}$	2d.] $\begin{array}{r} 32452 \\ 52575 \\ \hline 162260 \\ 811300 \\ \hline 2433900 \\ \hline 1706163990 \end{array}$
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It is a matter of indifference which of the factors be used as the multiplier; for 4 multiplied by 3 gives the same product as 3 multiplied by 4: and the like holds universally true. To illustrate this, we may mark three rows of points, four in each row, placing the rows under each other; and we shall also have four rows, containing three points each, if we reckon the rows downwards.

Multiplication is proven by repeating the operation, using the multiplier for the multiplicand, and the multiplicand for the multiplier. It may also be proven by division, or by casting out the 9's; of which afterwards; and an account, wrought by any contraction, may be proven by performing the operation at large, or by a different contraction.

Compound Multiplication.

RULE I. "If the multiplier do not exceed 12, the operation is performed at once, beginning at the lowest place, and carrying according to the value of the higher place."

[Examples.]

Cwt.	qr.	lb.	A.	R.	P.	lb.	oz.	dwt.
L. 13	6	7	12	2	8	13	3	18
		9			5		6	12
L. 119	19	3	62	3	12	83	—	28
						89	5	8

RULE II. "If the multiplier be a composite number, whose component parts do not exceed 12, multiply first by one of these parts, then multiply the product by the other. Proceed in the same manner if there be more than two."

Ex. 1st.] L. 15 3 8 by $32=8 \times 4$

L. 121 9 4 = 8 times.

L. 485 17 4 = 32 times.

2d.] L. 17 3 8 by $75=5 \times 5 \times 3$

L. 51 11 — = 3 times.

L. 257 15 — = 15 times.

L. 1288 15 — = 75 times.

Note 1. Although the component parts will answer in any order, it is best, when it can be done, to take them in such order as may clear off some of the lower places at the first multiplication, as is done in Ex. 2d.

Note 2. The operation may be proved, by taking the component parts in a different order, or dividing the multiplier in a different manner.

RULE III. "If the multiplier be a prime number, multiply first by the composite number next lower, then by the difference, and add the products."

Multipli-
cation.

L. 35 17 9 by 67=64+3 Here because 8 times 8
8 64= 8x8 is 64, we multiply twice
by 8, which gives L. 2296,
16s. equal to 64 times the
multiplicand; then we find
the amount of 3 times the
multiplicand, which is
107 13 3 = 3 times. L. 107 : 13 : 3; and it is
evident, that these added
L. 2404 9 3 = 67 times. amount to 67, the multi-
plicand.

RULE IV. "If there be a composite number a lit-
tle above the multiplier, we may multiply by that
number, and by the difference, and subtract the
second product from the first."

L. 17 4 5 by 106=108-2 Here we multiply
12 108= 9x12 by 12 and 9, the com-
ponent parts of 108,
and obtain a product
of L. 1860, 6s. equal
to 108 times the mul-
tiplicand; and, as this
is twice oftener than
was required, we sub-
tract the multiplicand
doubled, and the re-
mainder is the num-
ber sought.

Example. L. 34 : 8 : 2½ by 3465.

RULE V. "If the multiplier be large, multiply by
10, and multiply the product again by 10; by
which means you obtain an hundred times the gi-
ven number. If the multiplier exceed 1000, mul-
tiply by 10 again; and continue it farther if the
multiplier require it; then multiply the given
number by the unit-place of the multiplier; the
first product by the ten-place, the second product
by the hundred-place; and so on. Add the pro-
ducts thus obtained together."

L. 34 8 2½ by 5=L. 172 1 ½ = 5 times
10

10 times L. 344 2 1 by 6= 2064 12 6= 60 times
10

100 times L. 3441 — 10 by 4= 13764 3 4= 400 times,
10

1000 times L. 34410 8 4 by 3= 103231 5 = 3000 times

L. 119232 1 10½=3465 times

The use of multiplication is to compute the amount
of any number of equal articles, either in respect of
measure, weight, value, or any other consideration.
The multiplicand expresses how much is to be reck-
oned for each article; and the multiplier expresses
how many times that is to be reckoned. As the
multiplier points out the number of articles to be
added, it is always an abstract number, and has no
reference to any value or measure whatever. It is
therefore quite improper to attempt the multiplica-
tion of shillings by shillings, or to consider the multi-
plier as expressive of any denomination. The most
common instances in which the practice of this ope-
ration is required, are, to find the amount of any
number of parcels, to find the value of any number
of articles, to find the weight or measure of a num-
ber of articles, &c.

This computation, for changing any sum of money, weight, or measure, into a different kind, is called
REDUCTION. When the quantity given is expressed
in different denominations, we reduce the highest to
the next lower, and add thereto the given number of
that denomination; and proceed in like manner till
we have reduced it to the lowest denomination.

Example. To reduce L. 46 : 13 : 8½ to farthings.

L. 46

20

Or thus :

920 shillings in L. 46

L. 46 13 8½

13

20

933 shillings in L. 46 13

933

12

12

11196 pence in L. 46 13

11204

8

4

11204 pence in L. 46 13 8

44819

4

44816 farthings in L. 46 13 8

3

44819 farthings in L. 46 13 8½

It is easy to take in or add the higher denomina-
tion at the same time we multiply the lower.

CHAP. V. DIVISION.

IN division, two numbers are given; and it is re-
quired to find how often the former contains the lat-
ter. Thus, it may be asked how often 21 contains
7, and the answer is exactly 3 times. The former
given number (21) is called the *Dividend*; the lat-
ter (7) the *Divisor*; and the number required (3)
the *Quotient*. It frequently happens that the division
cannot be completed exactly without fractions. Thus
it may be asked, how often 8 is contained in 19? the
answer is twice, and a remainder of 3.

This operation consists in subtracting the divisor
from the dividend, and again from the remainder, as
often as it can be done, and reckoning the number
of subtractions; as,

21

7 first subtraction

19

8 first subtraction

14

7 second subtraction

11

8 second subtraction

7

7 third subtraction

3

3 remainder.

0

As this operation, performed at large, would be
very tedious, when the quotient is a high number, it
is proper to shorten it by every convenient method;
and, for this purpose, we may multiply the divisor
by any number whose product is not greater than
the dividend, and so subtract it twice or thrice, or
oftener at the same time. The best way is to mul-
tiply it by the greatest number, that does not raise
the product too high, and that number is also the
quotient. For example, to divide 45 by 7, we en-
quire what is the greatest multiplier for 7, that does

Division. not give a product above 45; and we shall find that it is 6; and 6 times 7 is 42, which, subtracted from 45, leaves a remainder of 3. Therefore 7 may be subtracted 6 times from 45; or, which is the same thing, 45, divided by 7, gives a quotient of 6, and a remainder of 3.

If the divisor do not exceed 12, we readily find the highest multiplier that can be used from the multiplication table. If it exceed 12, we may try any multiplier that we think will answer. If the product be greater than the dividend, the multiplier is too great; and, if the remainder, after the product is subtracted from the dividend, be greater than the divisor, the multiplier is too small. In either of these cases, we must try another. But the attentive learner, after some practice, will generally hit on the right multiplier at first.

If the divisor be contained oftener than ten times in the dividend, the operation requires as many steps as there are figures in the quotient. For instance, if the quotient be greater than 100, but less than 1000, it requires 3 steps. We first inquire how many hundred times the divisor is contained in the dividend, and subtract the amount of these hundreds. Then we inquire how often it is contained ten times in the remainder, and subtract the amount of these tens. Lastly, we inquire how many single times it is contained in the remainder. The method of proceeding will appear from the following example:

To divide 5936 by 8.

From	5936
Take	5600 = 700 times 8
Rem.	336
From which take	320 = 40 times 8
Rem.	16
From which take	16 = 2 times 8
	0 742 times 8 in all.

It is obvious, that as often as 8 is contained in 59, so many hundred times it will be contained in 5900, or in 5936; and, as often as it is contained in 33, so many ten times it will be contained in 330, or in 336; and thus the higher places of the quotient will be obtained with equal ease as the lower. The operation might be performed by subtracting 8 continually from the dividend, which will lead to the same conclusion by a very tedious process. After 700 subtractions, the remainder would be 336; after 40 more, it would be 16; and after 2 more, the dividend would be entirely exhausted. In practice, we omit the cyphers, and proceed by the following

RULES. 1st, "Assume as many figures on the left hand of the multiplier as contain the divisor once or oftener: find how many times they contain it, and place the answer as the highest figure of the quotient."
2d, "Multiply the divisor by the figure you have found, and place the product under the part of the dividend from which it is obtained."
3d, "Subtract the product from the figures above it."
4th, "Bring down the next figure of the dividend to the remainder, and divide the number it makes up, as before."

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Examples.] 1st. 8)5936(742 2d. 63)30114(478 Division.

5600	2520
33	491
32	441
16	504
16	504
0	0

3d. 365)974932(2671 $\frac{17}{365}$

730000
2449
2190
2593
2555
382
365

Remainder 17

The numbers which we divide, as 59, 33, and 16, in the first example, are called *dividends*.

It is usual to mark a point under the figures of the dividend, as they are brought down, to prevent mistakes.

If there be a remainder, the division is completed by a vulgar fraction, whose numerator is the remainder, and its denominator the divisor. Thus, in Ex. 3. the quotient is 2671, and remainder 17; and the quotient completed is $2671 \frac{17}{365}$.

A number which divides another without a remainder is said to measure it; and the several numbers which measure another, are called its *aliquot parts*. Thus, 2, 4, 6, 8, and 12, are aliquot parts of 24. As it is often useful to discover numbers which measure others, we may observe,

1st, Every number ending with an even figure, that is, with 2, 4, 6, 8, or 0, is measured by 2.

2d, Every number ending with 5, or 0, is measured by 5.

3d, Every number, whose figures, when added, amount to an even number of 3's or 9's, is measured by 3 or 9 respectively.

Contractions and Varieties in Division.

First, When the divisor does not exceed 12, the whole computation may be performed without setting down any figures except the quotient.

Ex. 7)35868(5124 or 7)35868

Secondly, When the divisor is a composite number, and one of the component parts also measures the dividend, we may divide successively by the component parts.

Ex. 1st.] 30114 by 63. 2d.] 975 by 105 = 5 × 7 × 3

9)30114	5)975
7)3346	3)195
Quotient 478	7)65
	Quotient 97

This method might be also used, although the component parts of the divisor do not measure the dividend; but the learner will not understand how to manage

Division. manage the remainder till he be acquainted with the doctrine of vulgar fractions.

Thirdly, When there are cyphers annexed to the divisor, cut them off, and cut off an equal number of figures from the dividend; annex these figures to the remainder. *Ex.* To divide 378643 by 5200.

$$\begin{array}{r} 52 \overline{) 378643} \\ \underline{364} \\ 146 \\ \underline{104} \\ 4243 \end{array}$$

The reason will appear by performing the operation at large, and comparing the steps.

To divide by 10, 100, 1000, or the like. Cut off as many figures on the right hand of the dividend as there are cyphers in the divisor. The figures which remain on the left hand compose the quotient, and the figures cut off compose the remainder.

Fourthly, When the divisor consists of several figures we may try them separately, by inquiring how often the first figure of the divisor is contained in the first figure of the dividend, and then considering whether the second and following figures of the divisor be contained as often in the corresponding ones of the dividend with the remainder (if any) prefixed. If not, we must begin again, and make trial of a lower number. When the remainder is nine, or upwards, we may be sure the division will hold through the lower places; and it is unnecessary to continue the trial farther.

Fifthly, We may make a table of the products of the divisor, multiplied by the nine digits, in order to discover more readily how often it is contained in each dividend. This is convenient when the dividend is very long, or when it is required to divide frequently by the same divisor.

73 by 2 = 146	73)53872694(737982
3 = 219	511.....
4 = 292	
5 = 365	277
6 = 438	219
7 = 511	
8 = 584	582
9 = 657	511
	716
	657
	599
	584
	154
	146
	Rem. 8

Sixthly, To divide by 9, 99, 999, or any number of 9's, transcribe under the dividend part of the same, shifting the highest figure as many places to the right hand as there are 9's in the divisor. Transcribe it again, with the like change of place, as often as the length of the dividend admits; add these together, and cut off as many figures from the right hand of the sum as there are 9's in the divisor. The

figures which remain on the left hand compose the quotient, and those cut off the remainder. *Division.*

If there be any carriage to the unit-place of the quotient, add the number carried likewise to the remainder, as in *Ex. 2.*; and if the figures cut off be all 9's, add 1 to the quotient, and there is no remainder.

<i>Examples.</i> 1st.] 99)324123	2d.] 99)547825
3241	5478
32	54
3273 96	5533 57
Quotient 3273 and rem. 96.	1

Quotient 5333.58 rem.

$$\begin{array}{r} 3d.] 999)476523 \\ \underline{476} \\ 476|999 \\ \underline{1} \\ \text{Quotient } 477 \end{array}$$

To explain the reason of this, we must recollect, that whatever number of hundreds any dividend contains, it contains an equal number of 99's, together with an equal number of units. In *Ex. 1.* the dividend contains 3241 hundreds, and a remainder of 23. It therefore contains 3241 times 99, and also 3241, besides the remainder already mentioned.—Again, 3241 contains 32 hundreds, and a remainder of 51: it therefore contains 32 99's, and also 32 besides the remainder of 41. Consequently the dividend contains 99, altogether, 3241 times, and 32 times, that is 3273 times, and the remainder consists of 23, 41, and 32, added, which makes 96.

As multiplication supplies the place of frequent additions, and division of frequent subtractions, they are only repetitions and contractions of the simple rules, and when compared together, their tendency is exactly opposite. As numbers, increased by addition, are diminished and brought back to their original quantity by subtraction; in like manner, numbers compounded by multiplication are reduced by division to the parts from which they were compounded. The multiplier shows how many additions are necessary to produce the number; and the quotient shows how many subtractions are necessary to exhaust it. It follows, that the product, divided by the multiplicand, will quote the multiplier; and, because either factor may be assumed for the multiplicand, therefore the product divided by either factor quotes the other. It follows, also, that the dividend is equal to the product of the divisor and quotient multiplied together; and hence these operations mutually prove each other.

To prove multiplication. Divide the product by either factor. If the operation be right, the quotient is the other factor, and there is no remainder.

To prove division. Multiply the divisor and quotient together; to the product add the remainder, if any; and, if the operation be right, it makes up the dividend. Otherwise divide the dividend (after subtracting the remainder, if any) by the quotient. If the operation be right, it will quote the divisor. The reason of all these rules may be collected from the last paragraph.

Compound

RULE I. "When the dividend only consists of different denominations, divide the higher denomination, and reduce the remainder to the next lower, taking in (p. 296. Rule V.) the given number of that denomination, and continue the division."

Examples.

Divide L. 465 : 12 : 8
by 72.

L. s. d. L. s. d.
72)465 12 8 (6 9 4
432 ..

33
20

72)672
648

24
12

72)296
288

8 Rem.

Or we might divide by the component parts of 72, (as explained under Thirdly, p. 298.)

Divide 345 cwt. 1 q. 8 lb.
by 22.

Cwt. q. lb. Cwt. q. lb.
22)345 1 8 (15 2 22
22 ..

125
110

15
4

22)61
44

17
28

144
34

22)484
44

44
44

0

RULE II. "When the divisor is in different denominations, reduce both divisor and dividend to the lowest denomination, and proceed as in simple division. The quotient is an abstract number."

To divide L. 38 : 13 s. by L. 3 : 4 : 5. To divide 96 Cwt. 1 q. 20 lb. by 3 cwt. 2 q. 8 lb.

L. 3 4 5 L. 38 13 Cwt. q. lb. Cwt. q. lb.
20 20 3 2 8) 96 1 20
4 4

64
12

773

1546
1546

0

It is best not to reduce the terms lower than is necessary to render them equal. For instance, if each of them consists of an even number of sixpences, fourpences, or the like, we reduce them to sixpences, or fourpences, but not to pence.

The use of division is to find either of the factors by whose multiplication a given number is produced,

when the other factor is given; and therefore is of two kinds, since either the multiplier or the multiplicand may be given. If the former be given, it discovers what that number is which is contained so many times in another. If the latter be given, it discovers how many times one number is contained in another. Thus, it answers the questions of an opposite kind to those mentioned under Rule IV. p. 296. as, To find the quantity of a single parcel or share; to find the value, weight, or measure, of a single article; to find how much work is done, provisions consumed, interest incurred, or the like, in a single day, &c.

The last use of division is a kind of reduction exactly opposite to that described under Rule V. p. 296. The manner of conducting and arranging it, when there are several denominations in the question, will appear from the following examples.

1. To reduce 15783 pence to pounds, sh. and pence. 2. To reduce 174865 grs. to lb. oz. and cwt. Troy.

20 12
12)15783(1315(65
12 .. 120 ..

37
36

18
12

63
60

3

Answer, L. 65 : 15 : 3.

20 12
24)174865(7286(364(30
168 .. 60 .. 36 ..

68
48

206
192

145
144

1

Ans. 30 lb. 4 oz. 6 dwt. 1 gr.

In the first example, we reduce 15783 pence to shillings, by dividing by 12, and obtain 1315 shillings, and a remainder of 3 pence. Then we reduce 1315 shillings to pounds, by dividing by 20, and obtain 65 pounds and a remainder of 15 shillings. The divisions might have been contracted.

In the practice of arithmetic, questions often occur which require both multiplication and division to resolve. This happens in reduction, when the higher denomination does not contain an exact number of the lower.

RULE for mixed reduction. "Reduce the given denomination by multiplication to some lower one, which is an aliquot part of both; then reduce that by division to the denomination required."

Ex. Reduce L. 31742 to guineas.

31742
20
21)634840(30230
63 ..

048

42

64

63

10

Answer, 30230 guineas and 10 shill.

Division.

As Portuguese money frequently passes here in payments, we shall give a table of the pieces, and their value.

A moidore	= L. 1 7 —
A half moidore	= — 13 6
A quarter moidore	= — 6 9
A double Joannes	= 3 12 —
A Joannes	= 1 16 —
A half ditto	= — 18 —
A quarter ditto	= — 9 —
An eighth ditto	= — 4 6

Note 1. Guineas may be reduced to pounds, by adding one twentieth part of the number.

2. Pounds may be reduced to merks by adding one half.

3. Merks may be reduced to pounds by subtracting one third.

4. Four moidores are equal to three Joannes: wherefore moidores may be reduced to Joannes, by subtracting one fourth; and Joannes to moidores, by adding one third.

5. Five Joannes are equal to L. 9. Hence it is easy to reduce Portuguese money to Sterling.

Another case, which requires both multiplication and division, is, when the value, weight, measure, or duration of any quantity is given, and the value, &c. of a different quantity required, we first find the value, &c. of a single article by division, and then the value, &c. of the quantity required by multiplication.

Ex. If 3 yards cost 15.s. 9d. what will 7 yards cost, at the same rate?

s.	d.
3) 15	9 Price of 3 yards.
5	3 Price of 1 yard by Rule IV. p. 296.
7	

L. 1 16 9 Price of 7 yards (by par. ult. p. 299. col 1.)

Many other instances might be adduced, where the operation and the reason of it are equally obvious. These are generally, though unnecessarily, referred to the rule of proportion.

We shall now offer a general observation on all the operations in Arithmetic. When a computation requires several steps, we obtain a just answer, whatever order we follow. Some arrangements may be preferable to others in point of ease, but all of them lead to the same conclusion. In addition, or subtraction, we may take the articles in any order, as is evident from the idea of number; or, we may collect them into several sums, and add or subtract these, either separately or together. When both the simple operations are required to be repeated, we may either complete one of them first, or may introduce them promiscuously, and the compound operations admit of the same variety. When several numbers are to be multiplied together, we may take the factors in any order, or we may arrange them into several classes, find the product of each class, and then multiply the products together. When a number is to be divided by several others, we may take the divisors in any order, or we may multiply them into each other, and divide by the product; or we may multiply them into several parcels, and divide by the products successively. Lastly, when multiplication and division are both required, we may begin with either; and when both are repeatedly necessary, we may collect

the multipliers into one product, and the divisors into one another; or, we collect them into parcels, or use them singly, and that in any order. Still we shall obtain the proper answer, if none of the terms be neglected.

When both multiplication and division are necessary to obtain the answer of a question, it is generally best to begin with the multiplication, as this order keeps the account as clear as possible from fractions. The example last given may be wrought accordingly as follows.

s.	d.
15	9
7	
3) 5 10 3	
1 16 9	

Some accountants prove the operations of arithmetic by a method which they call casting out the 9's, depending on the following principles:

First, if several numbers be divided by any divisor: (the remainders being always added to the next number), the sum of the quotients, and the last remainder, will be the same as those obtained when the sum of the numbers is divided by the same divisor. Thus, 19, 15, and 23, contain, together, as many 5's, as many 7's, &c. as their sum 57 does, and the remainders are the same; and, in this way, addition may be proven by division. It is from the correspondence of the remainders, that the proof, by casting out the 9's, is deduced.

Secondly, If any figure, with cyphers annexed, be divided by 9, the quotient consists entirely of that figure; and the remainder is also the same. Thus, 40 divided by 9, quotes 4, remainder 4; and 400 divided by 9, quotes 44, remainder 4. The same holds with all the digits; and the reason will be easily understood; every digit, with a cypher annexed, contains exactly so many tens; it must therefore contain an equal number of 9's, besides a remainder of an equal number of units.

Thirdly, If any number be divided by 9, the remainder is equal to the sum of the figures of the number, or to the remainder obtained, when that sum is divided by 9. For instance, 3765, divided by 9, leave a remainder of 3, and the sum of 3, 7, 6, and 5, is 21; which divided by 9, leaves a remainder of 3. The reason of this will appear from the following illustration:

3000	divided by 9	quotes 333;	remainder 3
700		quotes 77;	remainder 7
60		quotes 6;	remainder 6
5		quotes 0;	remainder 5
3765		416 Sum of Rem.	21
Again: 21	divided by 9	quotes 2;	remainder 3

therefore, 3765 divid. by 9 quotes 418; remainder 3; for the reason given. Hence we may collect the following rules for practice.

To cast the 9's out of any number, or to find what remainder will be left when any number is divided by 9: Add the figures; and, when the sum exceeds 9, add the figures which would express it. Pass by the 9's; and, when the sum comes exactly to 9, neglect it, and begin anew. For example, if it be required to cast the 9's out of 3573294, we reckon thus: 3 and 5 is

Division. 5 is 8, and 7 is 15; 1 and 5 is 6, and 3 is 9, which we neglect; 2 and (passing by 9) 4 is 6; which is the remainder or RESULT. If the article out of which the 9's are to be cast contains more denominations than one, we cast the 9's out of the higher, and multiply the result by the value of the lower, and carry on the product (casting out the 9's, if necessary), to the lower.

To prove addition, cast the 9's out of the several articles, carrying the results to the following articles; cast them also out of the sum. If the operation be right, the results will agree.

To prove subtraction, cast the 9's out of the minuend; cast them also out of the subtrahend and remainder together; and if you obtain the same result, the operation is presumed right.

To prove multiplication, cast the 9's out of the multiplicand, and also out of the multiplier, if above 9. Multiply the results together, and cast the 9's, if necessary, out of their product. Then cast the 9's out of the product, and observe if this result correspond with the former.

Ex. 1st.] 9276 ref. 6 $\times$ 8 = 48 ref. 3.

74208 ref. 3.
2d.] 7898 ref. 5 $\times$ 3 = 15 ref. 6.
48 ref. 3.

63184
31592

379104 ref. 6.

The reason of this will be evident, if we consider multiplication under the view of repeated addition. In the first example it is obviously the same. In the second, we may suppose the multiplicand repeated 48 times. If this be done, and the 9's cast out, the result, at the end of the 9th line, will be 0; for any number, repeated 9 times, and divided by 9, leaves no remainder. The same must happen at the end of the 18th, 27th, 36th, and 45th lines; and the last result will be the same as if the multiplicand had only been repeated 3 times. This is the reason for casting out the 9's from the multiplier as well as the multiplicand.

To prove division, cast the 9's out of the divisor, and also out of the quotient; multiply the results, and cast the 9's out of the product. If there be any remainder, add to it the result, casting out the 9's, if necessary. If the account be right, the last result will agree with that obtained from the dividend.

Ex. 42) 2490) 59 ref. 5 $\times$ 6 = 30 ref. 3.
ref. 6 210

390
378

Rem. 12 - - - ref. 3.

And the result of the dividend is 6

This depends on the same reason as the last; for the dividend is equal to the product of the divisor and quotient added to the remainder.

We cannot recommend this method, as it lies under Proportion the following disadvantages:

First, If an error of 9, or any of its multiples, be committed, the results will nevertheless agree; and so the error will remain undiscovered. And this will always be the case, when a figure is placed or reckoned in a wrong column; which is one of the most frequent causes of error.

Secondly, When it appears by the disagreement of the results, that an error has been committed, the particular figure or figures in which the error lies are not pointed out; and, consequently, it is not easily corrected.

CHAP. VI. RULE OF PROPORTION.

13.

SECT. I. SIMPLE PROPORTION.

QUANTITIES are reckoned proportional to each other, when they are connected in such a manner, that if one of them be increased or diminished, the other increases or diminishes at the same time; and the degree of the alteration on each is a like part of its original measure; thus four numbers are in the same proportion, the first to the second as the third to the fourth, when the first contains the second, or any part of it, as often as the third contains the fourth, or the like part of it. In either of these cases, the quotient of the first, divided by the second, is equal to that of the third divided by the fourth; and this quotient may be called the *measure of the proportion*.

Proportionals are marked down in the following manner:

6 : 3 :: 8 : 4
12 : 36 :: 9 : 27
9 : 6 :: 24 : 18
16 : 24 :: 10 : 15

The rule of proportion directs us, when three numbers are given, how to find a fourth, to which the third may have the same proportion that the first has to the second. It is sometimes called the *Rule of Three*, from the three numbers given; and sometimes the *Golden Rule*, from its various and extensive utility.

RULE. "Multiply the second and third terms together, and divide the product by the first."

Ex. To find a fourth proportional to 18, 27, and 34.

18 : 27 :: 34 : 51

34

108

81

18) 918 (51

90

18

18

0

To explain the reason of this, we must observe, that if two or more numbers be multiplied or divided alike, the products or quotients will have the same proportion.

18 : 27
Multiplied by 34, 612 : 918
Divided by 18, 34 : 51

The

Proportion.

The products 612, 918, and the quotients 34, 51, have therefore the same proportion to each other that 18 has to 27. In the course of this operation, the products of the first and third term is divided by the first; therefore the quotient is equal to the third.

The first and second terms must always be of the same kind; that is, either both monies, weights, measures, both abstract numbers, or the like. The fourth, or number sought, is of the same kind as the third.

When any of the terms is in more denominations than one, we may reduce them all to the lowest. But this is not always necessary. The first and second should not be reduced lower than directed p. 299, col. 1. par. penult.; and, when either the second or third is a simple number, the other, though in different denominations, may be multiplied without reduction.

$$\begin{array}{r} L. \quad s. \quad d. \\ \text{Ex. } 5 : 7 :: 25 \quad 11 \quad 3 \\ \quad \quad \quad 7 \\ \hline \quad \quad \quad L. \quad s. \quad d. \\ 5)178 \quad 18 \quad 9)35 \quad 19 \quad 9 \end{array}$$

The accountant must consider the nature of every question, and observe the circumstance which the proportion depends on; and common sense will direct him to this if the terms of the question be understood. It is evident that the value, weight, and measure of any commodity is proportioned to its quantity; that the amount of work or consumption is proportioned to the time; that gain, loss, or interest, when the rate and time are fixed, is proportioned to the capital sum from which it arises; and that the effect produced by any cause is proportioned to the extent of the cause. In these, and many other cases, the proportion is direct, and the number sought increases or diminishes along with the term from which it is derived.

In some questions, the number sought becomes less, when the circumstances from which it is derived become greater. Thus, when the price of goods increases, the quantity which may be bought for a given sum is smaller. When the number of men employed at work is increased, the time in which they may complete it becomes shorter; and, when the activity of any cause is increased, the quantity necessary to produce a given effect is diminished. In these, and the like, the proportion is said to be inverse.

GENERAL RULE for stating all questions, whether direct or inverse. "Place that number for the third term which signifies the same kind of thing with what is sought, and consider whether the number sought will be greater or less. If greater, place the least of the other terms for the first; but, if less, place the greatest for the first."

Ex. 1st. If 30 horses plough 12 acres, how many will 42 plough in the same time?

H. H. A.

$$30 : 42 :: 12$$

Here, because the thing sought is a number of acres, we place 12, the given number of acres, for the third term; and, because 42 horses will plough more than 12, we make the lesser number 30, the first term, and the greater number 42, the second term.

Ex. 2d. If 40 horses be maintained for a certain sum on hay, at 5 d. per stone, how many will be maintained on the same sum when the price of hay ri-

ses to 8 d.

d. d. H.

$$8 : 5 :: 40$$

Here, because a number of horses is sought, we make the given number of horses, 40, the third term; and, because fewer will be maintained for the same money, when the price of hay is dearer, we make the greater price, 8 d. the first term; and the lesser price 5 d. the second term.

The first of these examples is direct, the second inverse. Every question consists of a supposition and demand. In the first, the supposition is, that 30 horses plough 12 acres, and the demand, how many 42 will plough? and the first term of the proportion, 30, is found in the supposition, in this, and every other direct question. In the second, the supposition is, that 40 horses are maintained on hay at 5 d. and the demand, how many will be maintained on hay at 8 d.? and the first term of the proportion, 8, is found in the demand, in this and every other inverse question.

When an account is stated, if the first and second term, or first and third, be measured by the same number, we may divide them by that measure, and use the quotients in their stead.

Ex. If 36 yards cost 42 shillings, what will 27 cost?

Y. Y. sh.

$$36 : 27 :: 42$$

$$4 : 3 :: 42$$

3

s. d.

$$4)126(31 \quad 6$$

Here 36 and 27 are both measured by 9, and we work with the quotients 4 and 3.

SECT. II. COMPOUND PROPORTION.

Sometimes the proportion depends upon several circumstances. Thus, it may be asked, if 18 men consume 6 bolls corn in 28 days, how much will 24 men consume in 56 days? Here the quantity required depends partly on the number of men, partly on the time, and the question may be resolved into the two following ones:

1st. If 18 men consume 6 bolls in a certain time, how many will 24 men consume in the same time?

M. M. B. B.

$$18 : 24 :: 6 : 8$$

6

Answer, 24 men will consume 8 bolls in the same time.

$$18)144(8$$

2d. If a certain number of men consume 8 bolls in 28 days, how many will they consume in 56 days?

D. D. B. B.

$$28 : 56 :: 8 : 16$$

8

Ans. The same number of men will consume 16 bolls in 56 days.

$$28)448(16$$

In the course of this operation, the original number of bolls, 6, is first multiplied into 24, then divided by 18, then multiplied into 8, then divided by 28. It would answer the same purpose to collect the multipliers into one product, and the divisors into another; and then to multiply the given number of bolls by the former, and divide the product by the latter. p. 300. col. 1. par. ult.

The above question may therefore be stated and wrought as follows:

Men

Proportion. Men 18 : 24 :: 6 bolls
Days 28 : 56

144 144
36 120
504 1344
6

504)8064(16

"In general, state the several particulars on which the question depends, as so many simple proportions, attending to the sense of the question to discover whether the proportions should be stated directly or inversely; then multiply all the terms in the first rank together, and all those in the second rank together; and work with the products as directed in the simple rule (Sect. i. p. 301.)"

Example. If 100 men make 3 miles of road in 27 days, in how many days will 150 men make 5 miles?

Men 150 : 100 :: 27 days
Miles 3 5

450 500
27

450)13500(30 days, anf.

The following contraction is often useful. After stating the proportion, if the same number occurs in both ranks, dash it out from both; or, if any term in the first rank, and another in the second rank, are measured by the same numbers, dash out the original terms, and use the quotients in their stead.

Ex. If 18 men consume L. 30 value of corn in 9 months, when the price is 16 s. per boll, how many will consume L. 54 value in 6 months, when the price is 12 s. per boll? In this question, the proportion depends upon three particulars, the value of corn, the time, and the price. The first of which is direct, because the more the value of provisions is, the more time is required to consume them; but the second and third are inverse, for the greater the time and price is, fewer men will consume an equal value.

Value 30 : 54 :: 18 men.

Months 9 : 6

Price 12 : 16

10 9
3 3
4

36 18

288 36

10)648(64

Here we observe that 6 in the first rank measures 54 in the second: so we dash them out, and place the quotient 9 in the second rank. Next, because 30 and 9 are both measured by 3, we dash them out, and place down the quotients 10 and 3; then, because 12 and 16 are both measured by 4, we dash them out, and place down the quotients 3 and 4. Lastly, because there is now 3 in both columns, we dash them out, and work with the remaining terms, according to the rule.

The monies, weights, and measures, of different countries, may be reduced from the proportion which they bear to each other.

Ex. If 112 lb. averdupois make 104 lb. of Holland, and 100 lb. of Holland make 89 of Geneva, and 110 of Geneva make 117 of Seville, how many lbs. of Se-

Here we multiply 18 into 28 for a divisor, and 6 into the product of 24 by 56, for a dividend.

vile will make 100 lb. averdupois?

112 : 104 :: 100
100 : 89
110 : 117

If it be required, how many lb. averdupois will make 100 of Seville, the terms would have been placed in the different columns thus:

104 : 112 :: 100
89 : 100
117 : 110

Sect. iii. DISTRIBUTIVE PROPORTION.

15

If it be required to divide a number into parts, which have the same proportion to each other, that several other given numbers have, we add these numbers together, and state the following proportion: As the sum is to the particular numbers, so is the number required to be divided to the several parts sought.

Ex. 1st.] Four partners engage to trade in company; A's stock is L. 150, B's L. 320, C's L. 350, D's L. 500, and they gain L. 730; Required how much belongs to each, if the gain be divided among them in proportion to their stocks:

	Stock	Part	Rem.
A's stock	L. 150	1320 : 150 :: 730 : L 82 19 1	120
B's	320	1320 : 320 :: 730 : 176 19 4	960
C's	350	1320 : 350 :: 730 : 193 11 2	720
D's	500	1320 : 500 :: 730 : 276 10 3	840

Whole stock 1320

Proof L. 730

This account is proved by adding the gains of the partners; the sum of which will be equal to the whole gain, if the operation be right; but, if there be remainders, they must be added, their sum divided by the common divisor, and the quotient carried to the lowest place.

Ex. 2d.] A bankrupt owes A L. 146, B L. 170, C L. 45, D L. 480, and E L. 72; his whole effects are only L. 342 : 7 : 6. How much should each have?

	Debt	Part	Share
A's debt	L. 146	913 : 146 :: L. 342 7 6 : L 54 15	A's share
B's	170	913 : 170 :: 342 7 6 : 63 15	B's
C's	45	913 : 45 :: 342 7 6 : 16 17	C's
D's	480	913 : 480 :: 342 7 6 : 180	D's
E's	72	913 : 72 :: 342 7 6 : 27	E's

L. 913

L. 342 7 6

This might also be calculated, by finding what composition the bankrupt was able to pay per pound; which is obtained by dividing the amount of his effects by the amount of his debts; and comes to 7 s. 6d. and then finding by the rules of practice, how much each debt came to at that rate.

CHAP. VII. RULES for PRACTICE.

16

The operations explained in the foregoing chapters comprehend the whole system of arithmetic, and are sufficient for every computation. In many cases, however, the work may be contracted, by adverting to the particular circumstances of the question. We shall explain, in this chapter, the most useful methods which practice has suggested for rendering mercantile computations easy; in which, the four elementary rules of arithmetic are sometimes jointly, sometimes separately, employed.

Sect. i. COMPUTATION of PRICES.

17

The value of any number of articles, at a pound, a shilling,

6

Practice.

shilling, or a penny, is an equal number of pounds, shillings or pence; and these two last are easily reduced to pounds. The value, at any other rate, may be calculated by easy methods, depending on some contraction already explained, or on one or more of the following principles.

1st, If the rate be an aliquot part of a pound, a shilling, or a penny, then an exact number of articles may be bought for a pound, a shilling, or a penny; and the value is found by dividing the given number accordingly. Thus, to find the price of so many yards at 2 s. 6d. which is the eighth part of a pound, we divide the quantity by eight, because every eight yards cost L. 1.

2d, If the rate be equal to the sum of two other rates which are easily calculated, the value may be found by computing these separately, and adding the sums obtained. Thus, the price of so many yards, at 9 d. is found, by adding their prices, at 6 d. and 3 d. together.

3d, If the rate be equal to the difference of two easy rates, they may be calculated separately, and the lesser subtracted from the greater. Thus, the value of so many articles at 11 d. is found, by subtracting their value at a penny from their value at a shilling. We may suppose that a shilling was paid for each article, and then a penny returned on each.

4th, If the rate be a composite number, the value may be found by calculating what it comes to at one of the component parts, and multiplying the same by the other.

CASE I. "When the rate is an aliquot part of a pound, divide the quantity by the number which may be bought for a pound."

Table of the aliquot parts of L. 1.

10 shillings = $\frac{1}{2}$ of L. 1.	1 shilling 4 d. = $\frac{1}{5}$ of L. 1.
6 s. 8 d. = $\frac{1}{3}$	1 s. 3 d. = $\frac{1}{10}$
5 s. = $\frac{1}{4}$	1 s. d. = $\frac{1}{20}$
4 s. = $\frac{1}{5}$	8 d. = $\frac{1}{10}$
3 s. 4 d. = $\frac{1}{6}$	6 d. = $\frac{1}{10}$
2 s. 6 d. = $\frac{1}{8}$	4 d. = $\frac{1}{10}$
2 s. = $\frac{1}{10}$	3 d. = $\frac{1}{10}$
1 s. 8 d. = $\frac{1}{12}$	2 d. = $\frac{1}{10}$

Ex. 1st.] What is the value of 7463 yards, at 4 s.?

5)7463

L. 1492 12 s.

2d.] What is the value of 1773 yards at 3 d.?

8|0)1773

L. 22 3 3

In the first example we divide by 5, because 4 s. is $\frac{1}{5}$ of a pound; the quotient 1492 shows how many pounds they amount to; besides which there remains three yards at 4 s. and these come to 12 s. In the second example, we divide by 80, as directed, and the quotient gives L. 22, and the remainder 13 yards, which at 3 d. comes to 3 s. and 3 d.

This method can only be used in calculating for the particular prices specified in the table. The following 6 cases comprehend all possible rates, and will therefore exhibit different methods of solving the foregoing questions.

CASE II. "When the rate consists of shillings only, multiply the quantity by the number of shillings, and divide the product by 20: Or, if the number of shillings be even, multiply by half the number, and divide the product by 10.

Ex. 1st.] 4573 at 13 s.

13

13719

4573

20)59449

L. 2972 9 s.

The learner will easily perceive, that the method in which the second example is wrought, must give the same answer as if the quantity had been multiplied by 14, and divided by 20; and, as the division by 10 doubles the last figure for shillings, and continues all the rest unchanged for pounds, we may obtain the answer at once, by doubling the right-hand figure of the product before we set it down.

If the rate be the sum of two or more aliquot parts of a pound, we may calculate these as directed in Case I. and add them. If it be any odd number of shillings, we may calculate for the even number next lower, and add thereto the value at a shilling. If it be 19 s. we may subtract the value at a shilling, from the value at a pound.

CASE III. "When the rate consists of pence only."

Method 1. If the rate be an aliquot part of a shilling, divide the quantity accordingly, which gives the answer in shillings; if not, it may be divided into two or more aliquot parts: calculate these separately, and add the values; reduce the answer to pounds.

1 penny is $\frac{1}{12}$ of a shilling.

2 d. $\frac{1}{6}$ of ditto.

3 d. $\frac{1}{4}$ of ditto.

4 d. $\frac{1}{3}$ of ditto.

6 d. $\frac{1}{2}$ of ditto.

5 d. is the sum of 4 d. and 1 d. or of 2 d. and 3 d.

7 d. is the sum of 4 d. and 3 d. or of 6 d. and 1 d.

8 d. is the sum of 6 d. and 2 d. or the double of 4 d.

9 d. is the sum of 6 d. and 3 d.

10 d. is the sum of 6 d. and 4 d.

11 d. is the sum of 6 d. 3 d. and 2 d.

Ex. 1st.] 7423 at 4 d.

3)7423

20)2474 4

L. 123 14 4

2d.] 9786 at 9 d.

At 6 d. = $\frac{1}{2}$ of 1 s. 4893

At 3 d. = $\frac{1}{4}$ of 6 d. 2446 6

At 9 d. 7339 6

L. 366 19 6

3d.] 4856 at 11 d.

At 6 d. = $\frac{1}{2}$ of 1 s. 2428

At 3 d. = $\frac{1}{4}$ of 6 d. 1214

At 2 d. = $\frac{1}{2}$ of 6 d. 809 4

11 d. 4451 4

L. 222 11 4

It is sometimes easier to calculate at two rates, whose difference is the rate required, and subtract the lesser value from the greater. Thus, the last example may be wrought by subtracting the value at a penny from the value at a shilling. The remainder must be the value

2d.] 7543 at 14 s.

7

10)52801

L. 5280 2 s.

Practice.

Practice. lue at 11d.

At 1 s. 4856 s. 10 d. may be wrought as
At 1 d. = $\frac{1}{12}$ 404 8 the difference of 1 s. and
— 2 d.; and several other rates
At 11d. 4451 4 in like manner.
L. 222 11 4

Meth. 2. Multiply the quantity by the number of pence, the product is the answer in pence. Reduce it to pounds.

Meth. 3. Find the value at a penny by division, and multiply the same by the number of pence.

CASE IV. "When the rate consists of farthings only, find the value in pence, and reduce it by division to pounds."

Ex. 1st. 37843 at 1 farthing. 2d. 23754 at $\frac{1}{2}$ d.
4)37843 farth. 2)23754 halfpence
12)9460 $\frac{1}{4}$ pence 12)11877 pence
788 4 $\frac{1}{4}$ 989 9
L. 39 8 4 $\frac{1}{4}$ L. 49 9 9
3d. 72564 at $\frac{1}{4}$ d. Or, 72564
3
At $\frac{1}{2}$ d. 3682 d.
4)217692 farth. At $\frac{1}{4}$ d. 18141 d.
1)54423 pence
4535 3 12)54423 d.
L. 226 15 3 4535 3
L. 226 15 3

We may also find the amount in twopences, threepences, fourpences, or sixpences, by one division, and reduce these as directed in Case I.

CASE V. "When the rate consists of pence and farthings, find the value of the pence, as directed in Case III. and that of the farthings from the portion which they bear to the pounds. Add these together, and reduce."

Ex. 1st.] 3287 at $5\frac{1}{4}$ d.

At 4 d. = $\frac{1}{3}$ of 1 s. 1095 8
At 1 d. = $\frac{1}{4}$ of 4 d. 273 11
At 1 f. = $\frac{1}{8}$ of 1 d. 68 5 $\frac{1}{2}$

At $5\frac{1}{4}$ 1438 $\frac{1}{4}$
L. 71 18 $\frac{1}{4}$
2d.] 4573 at $2\frac{1}{4}$ d.

At 2 d. = $\frac{1}{6}$ of 1 s. 762 2
At $\frac{1}{2}$ d. = $\frac{1}{4}$ of 2 d. 190 6 $\frac{1}{2}$
At $\frac{1}{4}$ d. = $\frac{1}{2}$ of $\frac{1}{2}$ d. 85 3 $\frac{1}{4}$

At $2\frac{1}{4}$ 1037 11 $\frac{1}{4}$
L. 51 17 11 $\frac{1}{4}$
3d.] 2842 at $3\frac{1}{4}$ d.

At 3 d. = $\frac{1}{4}$ of 1 s. 710 6
At 3 f. = $\frac{1}{4}$ of 3 d. 177 7 $\frac{1}{2}$

At $3\frac{1}{4}$ 888 1 $\frac{1}{2}$
L. 44 8 1 $\frac{1}{2}$
4th.] 2772 at $7\frac{1}{2}$ d.

At 6 d. = $\frac{1}{2}$ of 1 s. 1386
At $1\frac{1}{2}$ d. = $\frac{1}{4}$ of 6 d. 346 6

At $7\frac{1}{2}$ d. 1732 6
L. 86 12 6

It is sometimes best to join some of the pence with the farthings in the calculation. Thus, in Ex. 4. we reckon
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the value at 6 d. and at 3 halfpence, which makes $7\frac{1}{2}$ d. Practice.
If the rate be $1\frac{1}{2}$ d. which is an eighth part of a shilling, the value is found in shillings, by dividing the quantity by 8.

CASE VI. "When the rate consists of shillings and lower denominations."

Method I. Multiply the quantity by the shillings, and find the value of the pence and farthings, if any, from the proportion which they bear to the shillings. Add and reduce.

Ex. 1st.] 4258 at 17 s. 3d.

17
29806
4258
17 s. 72386
3 d. = $\frac{1}{4}$ of 1 s. 1064 6
17 s. 3 d. 73450 6
L. 3672 10 6
2d.] 5482 at 12 s. 4 $\frac{1}{2}$ d.
12

12 s. 65784
3 d. = $\frac{1}{4}$ of 1 s. 1370 6
1 $\frac{1}{2}$ d. = $\frac{1}{2}$ of 3 d. 685 3
12 s. 4 $\frac{1}{2}$ 67839 9
L. 3391 19 9

Method 2. Divide the rate into aliquot parts of a pound; calculate the values corresponding to these, as directed in Case I. and add them.

Ex. 1st.] 3894 at 17 6 2d.] 1765 at 9 2

10 s. = $\frac{1}{2}$ L. 1947 6s. 8d. = $\frac{1}{3}$ L. 588 6 8
5 = $\frac{1}{4}$ 973 10 2 6 = $\frac{1}{4}$ 220 12 6
2 6d. = $\frac{1}{8}$ 486 15 9s. 2d. 808 19 2
17 s. 6 d. L. 3407 5

Sometimes part of the value is more readily obtained from a part already found; and sometimes it is easiest to calculate at a higher rate, and subtract the value at the difference.

3d.] 63790 at 5 4 4th.] 3664 at 14 9

4 s. = $\frac{1}{5}$ L. 12758 10 s. = $\frac{1}{2}$ L. 1832
1s. 4d. = $\frac{1}{3}$ of 4s 4252 13 4 5 s. = $\frac{1}{2}$ of 10s 916

5s. 4d. L. 17010 13 4 15s. 2748
3d. = $\frac{1}{20}$ of 5s 45 16

14s. 9d. L. 2702 4

Method 3. If the price contain a composite number of pence, we may multiply the value at a penny by the component parts.

Ex. 5628 at 2 s. 11d. or 35 d.

12)5628
20)469
L. 23 9
5
L. 117 5
7

L. 820 15
Q 9

CASE

Practice.

CASE VII. "When the rate consists of pounds and lower denominations."

Method 1. Multiply by the pounds, and find the value of the other denominations from the proportion which they bear to the pounds.

Ex. 1st.] 3592 at L. 3 : 12 : 8.

$$\begin{array}{r} \text{L. 3} \\ 12 \text{ s.} = \frac{1}{2} \text{ of L. 3} \\ 8 \text{ d.} = \frac{1}{3} \text{ of 12 s.} \end{array}$$

L. 3 12 8

L. 13050 18 8
2d.] 543 at L. 2 : 2 : 5 : 10½.

L. 2

$$\begin{array}{r} 5 \text{ s.} = \frac{1}{4} \text{ of L. 1} \\ 10 \text{ d.} = \frac{1}{2} \text{ of 5 s.} \\ \frac{1}{2} \text{ d.} = \frac{1}{4} \text{ of 10 d.} \end{array}$$

L. 1245 10 1½

Method 2. Reduce the pounds to shillings, and proceed as in Case VI.

Ex. 1st.] 3592 at L. 3 : 12 : 8 2d.] 3683 at L. 2 : 4 : 11

$$\begin{array}{r} 72 \quad 20 \quad 45 \\ \hline 7184 \quad 72 \quad 18415 \\ 25144 \quad 14732 \\ \hline 258624 \quad \text{At } 45 \text{ s.} \quad 165735 \\ 4 \text{ d.} = \frac{1}{3} \text{ s.} \quad 1197 \quad 4 \quad \text{At } 1 \text{ d.} = \frac{1}{2} \text{ s.} \quad 307 \quad 11 \\ 4 \text{ d.} = \frac{1}{3} \text{ s.} \quad 1197 \quad 4 \quad \hline 44 \text{ s. } 11 \quad 165427 \quad 1 \\ 8 \text{ d.} \quad 261018 \quad 8 \quad \text{L. } 8271 \quad 7 \quad 1 \\ \text{L. } 1305018 \quad 8 \end{array}$$

The learner should at first try every calculation more ways than one; which will not only serve the purpose of proving the operation, but will render him expert at discovering the best method for solving each question, and will lead him to invent other methods; for we have not exhausted the subject.

Thus, if the number of articles be 20, each shilling of the rate makes a pound of the amount. If it be 12, each penny of the rate makes a shilling of the amount. If 240, each penny of the rate makes a pound of the amount. If 480, each half-penny makes a pound. If 960, each farthing makes a pound. If the number of articles be a multiple, or an aliquot part of any of these, the amount is easily calculated. And if it be near to any such number, we may calculate for that number, and add or subtract for the difference.

We have hitherto explained the various methods of computation, when the quantity is a whole number, and in one denomination. It remains to give the proper directions when the quantity contains a fraction, or is expressed in several denominations.

When the quantity contains a fraction, work for the integers by the preceding rules, and for the fraction take proportional parts.

When the quantity is expressed in several denominations and the rate given for the higher; calculate the higher, consider the lower ones as fractions, and work by the last rule.

When the rate is given for the lower denomination, reduce the higher denomination to the lower, and calculate accordingly.

Note 1st, 7 lb. 14 lb. and 21 lb. are aliquot parts of 1 q. : and 16 lb. is $\frac{1}{2}$ of 1 cwt. ; and are therefore easily calculated.

2d, If the price of a dozen be so many shillings, that of an article is as many pence; and if the price of a gross be so many shillings, that of a dozen is as many pence.

3d, If the price of a ton or score be so many pounds, that of 1 cwt. or a single article, is as many shillings.

4th, Though a fraction less than a farthing is of no consequence, and may be rejected, the learner must be careful lest he lose more than a farthing, by rejecting several remainders in the same calculation.

SECT. II. DEDUCTIONS ON WEIGHTS, &c.

18

THE full weight of any merchandise, together with that of the cask, box, or other package, in which it is contained, is called the *gross weight*. From this we must make proper deductions, in order to discover the quantity, for which price or duty should be charged, which is called the *nett weight*.

Tare is the allowance for the weight of the package; and this should be ascertained by weighing it before the goods are packed. Sometimes, however, particularly in payment of duty, it is customary to allow so much *per C.* or so much *per 100 lb.* in place of tare.

Tret is an allowance of 4 lb. on 104 granted on currants, and other goods on which there is waste, in order that the weight may answer when the goods are retailed.

Cloff, or Draught, is a further allowance granted on some goods in London, of 2 lb. on every 3 C. to turn the scale in favour of the purchaser. The method of calculating these and the like will appear from the following examples.

Ex. 1st, What is the nett weight of 17 C. 2 q. 14 lb. tare 18 lb. *per cwt.*

$$\begin{array}{r} \text{C. q. lb.} \\ 17 \quad 2 \quad 14 \text{ gross. or, } 17 \quad 2 \quad 14 \\ \hline 16 \text{ lb.} = \frac{1}{4} \text{ C.} \quad 2 \quad 2 \quad 2 \\ 2 \text{ lb.} = \frac{1}{8} \text{ of } 16 \text{ lb.} \quad 1 \quad 7 \\ \hline 18 \text{ lb.} \quad 2 \quad 3 \quad 9\frac{1}{4} \text{ tare.} \\ \hline 14 \quad 3 \quad 4\frac{3}{4} \text{ nett. } 28 \quad 317\frac{1}{4} \text{ lb. C. q. lb.} \end{array}$$

In the first method, we add the tare at 16 lb. which is $\frac{1}{4}$ of the gross weight to the tare, at 2 lb. which is $\frac{1}{8}$ of the former. In the second, we multiply the gross weight by 18; the tare is 1 lb. for each cwt. of the product, and is reduced by division to higher denominations.

2d.] What is tret of 158 C. 2 q. 24 lb.?

$$\begin{array}{r} \text{C. q. lb.} \quad \text{C. q. lb.} \\ 26) \quad 158 \quad 2 \quad 26 \quad (\quad 6 \quad - \quad 11 \text{ Tret.} \\ \hline 156 \end{array}$$

2

4

10

28

286

286

0

Because tret is always 4 lb. in 104, or 1 lb. in 26, it is obtained by dividing by 26.

Practice.

3d] What is the cloff on 28 C. 2 q.?

C. q.
28 2
2

3) 57 (19 lb.

This allowance being 2 lb. on every 3 C. might be found by taking $\frac{2}{3}$ of the number of C's and multiplying it by 2. It is better to begin with multiplication, for the reason given p. 300. col. 2. par. 1.

19

Se^{ct}. iii. COMMISSION, &c.

It is frequently required to calculate allowances on sums of money, at the rate of so many *per* L. 100. Of this kind is COMMISSION, or the allowance due to a factor for buying or selling goods, or transacting any other business; PREMIUM of INSURANCE, or allowance given for engaging to repay one's losses at sea, or otherwise; EXCHANGE, or the allowance necessary to be added or subtracted for reducing the money of one place to that of another; PREMIUMS on STOCKS, or the allowance given for any share of a public stock above the original value. All these and others of a like kind are calculated by the following

RULE. "Multiply the sum by the rate, and divide the product by 100. If the rate contain a fraction, take proportional parts."

Ex. What is the commission on L. 728, at $2\frac{1}{4}$ *per* cent.?

728
2
—
1456
 $\frac{1}{2}$ 364
 $\frac{1}{4}$ 182

100)2002

20

40

12

480

4 Ans. L. 20—4 $\frac{1}{2}$

320

When the rate is given in guineas, which is common in cases of insurance, you may add a twentieth part to the sum before you calculate. Or you may calculate at an equal number of pounds, and add a twentieth part to the answer.

When the given sum is an exact number of 10 pounds, the calculation may be done without setting down any figures. Every L. 10, at $\frac{1}{2}$ *per* cent. is a shilling; and at other rates in proportion. Thus, L. 170, at $\frac{1}{2}$ *per* cent. is 17 s.; and, at $\frac{1}{4}$ *per* cent. 8 s. 6 d.

Se^{ct}. iv. INTEREST.

Interest is the allowance given for the use of money by the borrower to the lender. This is computed at so many pounds for each hundred lent for a year, and a like proportion for a greater or a less time. The highest rate is limited by our laws to 5 *per* cent. which is called the *legal interest*; and is due on all debts constituted by bond or bill, which are not paid at the proper term, and is always understood when no other rate is mentioned.

The interest of any sum for a year, at any rate, is found by the method explained in the last section.

The interest of any number of pounds for a year, at 5 *per* cent. is one twentieth part, or an equal number of shillings. Thus, the interest of L. 34675 for a year, is 34675 shillings.

The interest for a day is obtained by dividing the interest for a year, by the number of days in a year. Thus, the interest of L. 34675 for a day is found by dividing 34675 shillings by 365, and comes to 95 shillings.

The interest for any number of days is obtained by multiplying the daily interest by the number of days. Thus, the interest of L. 34675 for 17 days, is 17 times 95 shillings, or 1615 shillings; and this divided by 20, in order to reduce it, comes L. 80 : 15 s.

It would have served the same purpose, and been easier to multiply at first by 17, the number of days; and, instead of dividing separately by 365, and by 20, to divide at once by 7300, the product of 365 multiplied by 20; and this division may be facilitated by the table inserted p. 298. col. 1.

The following practical rules may be inferred from the foregoing observations.

I. To calculate interest at 5 *per* cent. "Multiply the principal by the number of days, and divide the product by 7300."

II. To calculate interest at any other rate. "Find what it comes to at 5 *per* cent. and take a proper proportion of the same for the rate required."

Ex. 1st, Interest on L. 34675 for 17 days, at 5 *per* cent.

34675
17
—
242725
34675
— L. s.
7300)589475(80 15
584
—
5475
20
—
109500
73
—
365
365
—
0

Ex. 2d, Interest on L. 304 : 3 : 4 for 8 days, at 4 *per* cent.

L. 304 3 4
8
— s. d.
7300)2433 6 8 (6 8
20
—
48666
438
—
4866
12
—
58400
584
—
0

Q q 2

Int.

Int. at 5 per cent. L.— 6 8

Deduce $\frac{1}{2}$ — 1 4

Int. at 4 per cent. L.— 5 4

When partial payments are made, we proceed in the following manner: Let us suppose a bill of L. 170 was due 12th August, that L. 54 was paid on the 18th September, L. 56 on the 17th October, and the balance on the 14th November; and let it be required to find how much interest is due.

Days.			
Aug. 12. L. 170	37	1190	
Sept. 18. pd. 54		510	
			6290
	116	29	1044
Oct. 17. pd. 56		232	
			3364
	60	28	1680
Nov. 14. pd. 60			
			7300)11334(L. 1:11: $\frac{1}{2}$.

Here we subtract the several payments from the original sum in their order, placing the dates in the margin; and from this it appears that there is interest due on L. 170 from 12th August to 18th September, or L. 110 from 18th September to 17th October, and on L. 60 from 17th October to 14th November. We next compute the number of days in each of these periods, and mark it against the respective sum. Then we multiply each sum by the number of days; reserving a column, when necessary, for the products of the several figures in the multiplier. Lastly, we add these products, and divide their sum by 7300.

Interest on current accounts is calculated nearly in the same manner. For example, let the interest due on the following account be required to 31st July, at 4 per cent.?

Dr. Mr A. Baird, his account current with W. Neil, Cr.

1775.		1775.	
Jan. 15. To cash L. 160		Mar. 22. By cash L. 50	
Mar. 12. To ditto 36		May 16. By ditto 37	
June 23. To ditto 13 4 6		June 15. By ditto 25 12 6	
July 19. To ditto 26 13 4		28. By ditto 32 5 4	

1775.	L.	s.	d.	Days		
Jan. 15. Dr. 160				56	960	
Mar. 12. Dr. 36					800	
						8960
22 Cr. 50				10	1960	
May 16. Dr. 146				55	730	
Cr. 7					730	
						8030
June 15. Dr. 109				30	3270	
Cr. 25 12 6						
						Days 197
23. Dr. 83 7 6				8	667	
Dr. 13 4 6						
28. Dr. 96 12				5	483	
Cr. 32 5 4						
July 19. Dr. 64 6 3				21	64	
Dr. 26 13 4					1287	
						1351
31. 91				12	1092	
						1977300 25813(L. 3 10 8 $\frac{1}{2}$ at
						Deduce $\frac{1}{2}$ part 14 1 $\frac{1}{2}$

Interest at 4 per cent. L. 2 16 7

Here the sums on either side of the account are introduced according to the order of their dates. Those on the Dr. side are added to the former balance, and those on the Cr. side subtracted. Before we calculate the days, we try if the last sum L. 91, be equal to the balance of the account, which proves the additions and subtractions; and, before multiplying, we try if the sum of the column of days be equal to the number of days, from 15th January to 31st of July.

In the 5th and 6th multiplications, we begin at the pence column, and take in the carriage. In the 7th, instead of multiplying the 6 s. 8 d. by 21, we add the third part 21 to the product, because 6 s. 8 d. is the third of a pound. This is done by marking down the second line 1287, instead of 1280. As the computation on the odd shillings and pence is troublesome, and makes a very small increase of the interest, some neglect them altogether; others add one to the pound, when the shillings exceed 10, and neglect them when below it.

2d.] Required interest on the following account to 31st December, allowing 5 per cent. when the balance is due to J. T. and 4 per cent. when due to N. W.

Dr. Mr J. T. his account current with N. W. Cr.
Dec. 31. To balance L. 150 April 9. By cash L. 70
Mar. 12. To cash 120 May 12. By cash 300
June 17. To cash 165 June 3. By cash 240
Sept. 24. To cash 242 Aug. 2. By cash 10
Oct. 9. To cash 178

1775.	L.	Days		
Dec. 31. Dr. 150		71	150	
1776.			1050	
Mar. 12. Dr. 120			2160	10650
			540	
April 9. Cr. 70		28		7560
Dr. 200		33		6600
May 12. Cr. 300				
Cr. 100		22		2100
June 3. Cr. 240				
Cr. 340		14	1360	4760
17. Dr. 165			340	
Cr. 175		46	1050	8050
Aug. 2. Cr. 10			700	
Cr. 185		53	555	9805
Sept. 24. Dr. 242			925	
Dr. 57		15	285	
Oct. 9. Dr. 178			57	855
Dec. 31. Dr. 235		83	705	
			1880	
			365	19505
			700	45170 24815

Interest due to N. W. at 5. per cent. L. 6 8 9
Deduce $\frac{1}{2}$ 1 5 5

Due to N. W. at 4 per cent. L. 5 3 4
Due to J. T. at 5 per cent. 3 7 11 $\frac{1}{2}$

Balance due to N. W. L. 1 15 4 $\frac{1}{2}$
In

Practice. In this account, the balance is sometimes due to the one party, sometimes to the other. At the beginning, there is a balance due to N. W.; and, on the 9th of April, there is L. 200 due him. On the 12th of May, J. T. pays him L. 300, which discharges what he owed, and leaves a balance of L. 100 due him. The balance continues in J. T's favour till the 24th of September, when N. W. pays L. 242. These changes are distinguished by the marks Dr. and Cr. The products are extended in different columns, and divided separately.

When payments are made on constituted debts, at considerable distances of time, it is usual to calculate the interest to the date of each payment, and add it to the principal, and then subtract the payment from the amount.

Ex. A bond for L. 540 was due the 18th Aug. 1772; and there was paid 19th March 1773 L. 50; and 19th December 1773 L. 25; and 23d September 1774 L. 25; and 18th August 1775 L. 110. Required the interest and balance due on the 11th November 1775?

A bond due 18th August 1772	L. 540				
Interest to 19th March 1773, 218 days	L. 16	2	6	16	2 6
	L. 556				2 6
Paid 19th March 1773				50	
	L. 506				2 6
Balance due 19th March 1773					
Interest to 19th December 1773, 275 days	19	1	2	19	1 2
	L. 525				3 8
Paid 19th December 1773				25	
	L. 500				3 8
Balance due 19th December 1773					
Interest to 23d September 1774, 278 days	19	0	9	19	0 9
	L. 519				4 5
Paid 23d September 1774				25	
	L. 494				4 5
Balance due 23d September 1774					
Interest to 18th August 1775, 329 days	22	5	3	22	5 3
	L. 516				9 8
Paid 18th August 1775				110	
	L. 406				9 8
Balance due 18th August 1775					
Interest to 11th November 1775, 85 days	4	14	6	4	14 6
	L. 411				4 2
Balance due 11th November 1775					
Amount of the interest L. 81	4	2			

CHAP. VIII. VULGAR FRACTIONS.

In order to understand the nature of vulgar fractions; we must suppose unity (or the number 1) divided into several equal parts. One or more of these parts is called a *fraction*, and is represented by placing one number in a small character above a line, and another under it: For example, two fifth parts is written thus, $\frac{2}{5}$. The number under the line (5) shows how many parts unity is divided into, and is called the *denominator*. The number above the line (2) shows how many of these parts are represented, and is called the *numerator*.

It follows from the manner of representing fractions, that, when the numerator is increased, the value of the fraction becomes greater; but, when the denominator is increased, the value becomes less. Hence we may infer, that, if the numerator and denominator be both increased, or both diminished, in the same proportion, the value is not altered; and therefore, if we multiply

both by any number whatever, or divide them by any number which measures both, we shall obtain other fractions of equal value. Thus, every fraction may be expressed in a variety of forms, which have all the same signification.

A fraction annexed to an integer, or whole number, makes a mixed number. For example, five and two third-parts, or $5\frac{2}{3}$. A fraction whose numerator is greater than its denominator is called an *improper fraction*. For example, seventeen third-parts, or $\frac{17}{3}$. Fractions of this kind are greater than unity. Mixed numbers may be represented in the form of improper fractions, and improper fractions may be reduced to mixed numbers, and sometimes to integers. As fractions, whether proper or improper, may be represented in different forms, we must explain the method of reducing them from one form to another, before we consider the other operations.

PROBLEM I. "To reduce mixed numbers to improper fractions; Multiply the integer by the denominator of the fraction, and to the product add the numerator. The sum is the numerator of the improper fraction sought, and is placed above the given denominator."

Ex. $5\frac{2}{3} = \frac{17}{3}$
5 integer.
3 denominator.

15 product.
2 numerator given.

17 numerator sought.

Because one is equal to two halves, or 3 third parts, or four quarters, and every integer is equal to twice as many halves, or four times as many quarters, and so on; therefore, every integer may be expressed in the form of an improper fraction, having any assigned denominator: The numerator is obtained by multiplying the integer into the denominator. Hence the reason of the foregoing rule is evident. 5, reduced to an improper fraction, whose denominator is 3, makes $\frac{15}{3}$, and this added to $\frac{2}{3}$, amounts to $\frac{17}{3}$.

PROBLEM II. "To reduce improper fractions to whole or mixed numbers: Divide the numerator by the denominator."

Ex. $\frac{112}{102} = 6\frac{10}{102}$

17) 112 (6 $\frac{10}{102}$
102
—
10

1. $\frac{3248}{10}$ 5. $\frac{365}{15}$
2. $\frac{342}{12}$ 6. $\frac{7324}{15}$
3. $\frac{7536}{12}$ 7. $\frac{8642}{15}$
4. $\frac{15764}{12}$ 8. $\frac{4162}{15}$

This problem is the converse of the former, and the reason may be illustrated in the same manner.

PROBLEM III. "To reduce fractions to lower terms. Divide both numerator and denominator by any number which measures both, and place the quotients in the form of a fraction."

Example. $\frac{135}{360} = \frac{27}{72} = \frac{3}{8}$

Here we observe that 135 and 360 are both measured by 5, and the quotients form $\frac{27}{72}$, which is a fraction of the same value as $\frac{135}{360}$ in lower terms. Again, 27 and 72 are both measured by 9, and the quotients form $\frac{3}{8}$, which is still of equal value, and in lower terms.

It is generally sufficient, in practice, to divide by such measures as are found to answer on inspection, or by the rules given p. 396. col. 2. But, if it be required to reduce a fraction to the lowest possible terms, we must divide:

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vide the numerator and denominator by the greatest number which measures both. What number this is may not be obvious, but will always be found by the following rule.

To find the greatest common measure of two numbers, divide the greater by the lesser, and the divisor by the remainder continually, till nothing remain; the last divisor is the greatest common measure.

Example. Required the greatest number which measures 475 and 589?

475)589(1

475

114)475(4

456

19)114(6

114

0

To explain the reason of this, we must observe, that any number which measures two others, will also measure their sum, and their difference, and will measure any multiple of either. In the foregoing example, any number which measures 589 and 475, will measure their difference 114, and will measure 456, which is a multiple of 114; and any number which measures 475, and 456, will also measure their difference 19. Consequently, no number greater than 19 can measure 589 and 475. Again, 19 will measure them both, for it measures 114, and therefore measures 456, which is a multiple of 114, and 475, which is just 19 more than 456; and, because it measures 475 and 114, it will measure their sum 589. To reduce $\frac{475}{589}$ to the lowest possible terms, we divide both numbers by 19, and it comes to $\frac{25}{31}$.

If there be no common measure greater than 1, the fraction is already in the lowest terms.

If the greatest common measure of 3 numbers be required, we find the greatest measure of the two first, and then the greatest measure of that number, and the third. If there be more numbers, we proceed in the same manner.

PROBLEM IV. "To reduce fractions to others of equal value that have the same denominator: 1st, "Multiply the numerator of each fraction by all the "denominators except its own. The products are nu- "merators to the respective fractions sought." 2d, "Multiply all the denominators into each other; the "product is the common denominator."

Ex. $\frac{4}{7}$ and $\frac{7}{9}$ and $\frac{1}{5} = \frac{288}{360}$ and $\frac{280}{360}$ and $\frac{72}{360}$.

$4 \times 9 \times 8 = 288$ first numerator.

$7 \times 5 \times 8 = 280$ second numerator.

$3 \times 5 \times 9 = 135$ third numerator.

$5 \times 9 \times 8 = 360$ common denominator.

Here we multiply 4, the numerator of the first fraction, by 9 and 8, the denominators of the two others; and the product 288 is the numerator of the fraction sought, equivalent to the first. The other numerators are found in like manner, and the common denominator 360, is obtained by multiplying the given denominators 5, 9, 8, into each other. In the course of the whole operation, the numerators and denominators of each fraction are multiplied by the same number, and therefore their value is not altered.

Here we divide 589 by 475, and the remainder is 114; then we divide 475 by 114, and the remainder is 19; then we divide 114 by 19, and there is no remainder; from which we infer, that 19 the last divisor, is the greatest common measure.

The fractions thus obtained may be reduced to lower terms, if the several numerators and denominators have a common measure greater than unity. Or, after arranging the number for multiplication, as is done above, if the same number occur in each rank, we may dash them out and neglect them; and, if numbers which have a common measure occur in each, we may dash them out and use the quotients in their stead; or any number which is a multiple of all the given denominators, may be used as a common denominator. Sometimes a number of this kind will occur on inspection, and the new numerators are found by multiplying the given ones by the common denominator, and dividing the products by the respective given denominators.

If the articles given for any operation be mixed numbers, they are reduced to improper fractions by problem I. If the answer obtained be an improper fraction, it is reduced to a mixed number by problem II. And, it is convenient to reduce fractions to lower terms, when it can be done, by problem III. which makes their value better apprehended, and facilitates any following operation. The reduction of fractions to the same denominator by problem IV. is necessary to prepare them for addition or subtraction, but not for multiplication or division.

I. ADDITION of VULGAR FRACTIONS.

22

RULE. "Reduce them, if necessary, to a common denominator; add the numerators, and place the "sum above the denominator."

Ex. 1st.] $\frac{1}{2} + \frac{2}{3} = \frac{3}{6} + \frac{4}{6}$ by problem IV. $= \frac{7}{6}$

2d.] $\frac{1}{2} + \frac{2}{3} + \frac{1}{4} = \frac{6}{12} + \frac{8}{12} + \frac{3}{12} = \frac{17}{12}$ by problem II. $= 1\frac{5}{12}$

The numerators of fractions that have the same denominator signify like parts; and the reason for adding them is equally obvious, as that for adding shillings or any other inferior denomination.

Mixed numbers may be added, by annexing the sum of the fractions to the sum of the integers. If the former be a mixed number, its integer is added to the other integers.

2. SUBTRACTION of VULGAR FRACTIONS.

23

RULE. "Reduce the fractions to a common denominator; subtract the numerator of the subtrahend "from the numerator of the minuend, and place the "remainder above the denominator."

Ex. Subtract $\frac{2}{7}$ from $\frac{1}{2}$ remainder $\frac{1}{14}$.

$\frac{1}{2} = \frac{5}{10}$ } by Prob. IV. from 35
 $\frac{2}{7} = \frac{10}{35}$ } take 24

rem. 11.

To subtract a fraction from an integer: subtract the numerator from the denominator, and place the remainder above the denominator; prefix to this the integer diminished by unity.

Ex. Subtract $\frac{1}{2}$ from 12 remainder $11\frac{1}{2}$.

To subtract mixed numbers, proceed with the fractions by the foregoing rule, and with the integers in the common method. If the numerator of the fraction in the subtrahend exceed that in the minuend, borrow the value of the denominator, and repay it by adding 1 to the unit-place of the subtrahend.

Ex.

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Ex. Subtract $145\frac{7}{9}$ from $248\frac{3}{4}$

$$\begin{array}{r} 248\frac{3}{4} \\ - 145\frac{7}{9} \\ \hline 102\frac{17}{36} \end{array}$$

by Prob. IV.

Here, because 27 the numerator of the fraction in the minuend is less than 35, the numerator of the subtrahend, we borrow 45 the denominator; 27 and 45 make 72, from which we subtract 35, and obtain 37 for the numerator of the fraction in the remainder, and we repay what was borrowed, by adding 1 to 5 in the unit-place of the subtrahend.

The reason of the operations in adding or subtracting fractions will be fully understood, if we place the numerators of the fractions in a column like a lower denomination, and add or subtract them as integers, carrying or borrowing according to the value of the higher denomination.

3. MULTIPLICATION of VULGAR FRACTIONS.

RULE. "Multiply the numerators of the factors together for the numerator of the product, and the denominators together for the denominator of the product."

Ex. 1st.] $\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$ 2d.] $8\frac{3}{4} \times 7\frac{1}{2} = 65\frac{3}{2}$

$2 \times 5 = 10$ num. $8\frac{3}{4} = \frac{35}{4}$ by prob. I.
 $3 \times 7 = 21$ den. $7\frac{1}{2} = \frac{15}{2}$ by ditto.
 $42 \times 31 = 1302$
 $5 \times 4 = 20$

To multiply $\frac{2}{3}$ by $\frac{5}{7}$ is the same, as to find what two third parts of $\frac{5}{7}$ comes to; if one third part only had been required, it would have been obtained by multiplying the denominator 7 by 3, because the value of fractions is lessened when their denominators are increased; and this comes to $\frac{5}{21}$; and, because two thirds were required, we must double that fraction, which is done by multiplying the numerator by 2, and comes to $\frac{10}{21}$. Hence we infer that fractions of fractions, or compound fractions, such as $\frac{2}{3}$ of $\frac{5}{7}$, are reduced to simple ones by multiplication. The same method is followed when the compound fraction is expressed in three parts or more.

If a number be multiplied by any integer, its value is increased: If it be multiplied by 1, or taken one time, it undergoes no alteration. If it be multiplied by a proper fraction, or taken for one half, two thirds, or the like, its value is diminished, and the product is less than the number multiplied.

The foregoing rule extends to every case, when there are fractions in either factor. For mixed numbers may be reduced to improper fractions, as is done in Ex. 2d.; and integers may be written, or understood to be written, in the form of fractions whose numerator is 1. It will be convenient, however, to give some further directions for proceeding, when one of the factors is an integer, or when one or both are mixed numbers.

1st, To multiply an integer by a fraction, multiply it by the numerator, and divide the product by the denominator. Ex. $3756 \times \frac{1}{3} = 1252$

$$\begin{array}{r} 3756 \\ \times 1 \\ \hline 3756 \end{array}$$

2d, To multiply an integer by a mixed number, we multiply it first by the integer, and then by the fraction, and add the products.

Ex. $138 \times 5\frac{1}{4} = 793\frac{1}{4}$

$138 \times 5 = 690$

$138 \times \frac{1}{4} = 34\frac{1}{2}$

3

4)414(103

793

3d, To multiply a mixed number by a fraction, we may multiply the integer by the fraction, and the two fractions together, and add the products.

Ex. $15\frac{3}{8} \times \frac{2}{9} = 3\frac{1}{4}$

$15 \times \frac{2}{9} = 3\frac{2}{3}$
 $\frac{3}{8} \times \frac{2}{9} = \frac{1}{12}$
 $3\frac{2}{3} + \frac{1}{12} = 3\frac{9}{12} + \frac{1}{12} = 3\frac{10}{12} = 3\frac{5}{6}$

4th, When both fractions are mixed numbers, we may multiply each part of the multiplicand first by the integer of the multiplier, and then by the fraction, and add the four products.

Ex. $8\frac{3}{4}$ by $7\frac{1}{2}$

$8 \times 7 = 56$
 $8 \times \frac{1}{2} = 4$
 $\frac{3}{4} \times 7 = 5\frac{3}{4}$
 $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

product $65\frac{2}{3}$ as before.

4. DIVISION of VULGAR FRACTIONS.

RULE I. "Multiply the numerator of the dividend by the denominator of the divisor. The product is the numerator of the quotient."

II. "Multiply the denominator of the dividend by the numerator of the divisor. The product is the denominator of the quotient."

Ex. Divide $\frac{2}{3}$ by $\frac{7}{9}$ Quotient $\frac{18}{21}$

$2 \times 9 = 18$
 $5 \times 7 = 35$

To explain the reason of this operation, let us suppose it required to divide $\frac{2}{3}$ by $\frac{7}{9}$, or to take one seventh part of that fraction. This is obtained by multiplying the denominator by 7; for the value of fractions is diminished by increasing their denominators, and comes to $\frac{2}{21}$. Again, because $\frac{2}{3}$ is nine times less than seven, the quotient of any number divided by $\frac{7}{9}$ will be nine times greater than the quotient of the same number divided by $\frac{2}{3}$. Therefore we multiply $\frac{2}{21}$ by 9, and obtain $\frac{18}{21}$.

If the divisor and dividend have the same denominator, it is sufficient to divide the numerators.

Ex. $\frac{1}{2}$ divided by $\frac{1}{2}$ quotes 1.

The quotient of any number divided by a proper fraction is greater than the dividend. It is obvious, that any integer contains more halves, more third parts, and the like, than it contains units; and, if an integer and fraction be divided alike, the quotients will have the same proportion to the numbers divided; but the value of an integer is increased when the divisor is a proper fraction; therefore, the value of a fraction in the like case is increased also.

The foregoing rule may be extended to every case, by reducing integers and mixed numbers to the form of improper fractions. We shall add some directions for shortening the operation when integers and mixed numbers are concerned.

1st, When the dividend is an integer, multiply it by

6

by

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by the denominator of the divisor, and divide the product by the numerator.

Ex. Divide 368 by $\frac{4}{7}$

7

5)2576 (515 $\frac{1}{5}$ quotient.

2d, When the divisor is an integer, and the dividend a fraction, multiply the denominator by the divisor, and place the product under the numerator.

Ex. Divide $\frac{1}{8}$ by 5 quotient $\frac{1}{40}$

$$8 \times 5 = 40$$

3d, When the divisor is an integer, and the dividend a mixed number, divide the integer, and annex the fraction to the remainder; then reduce the mixed number, thus formed, to an improper fraction, and multiply its denominator by the divisor.

Ex. To divide 576 $\frac{4}{7}$ by 7 quotient 82 $\frac{4}{7}$

7) 576 (82

56

16

14

$$2\frac{4}{7} = \frac{18}{7}$$

$$11 \times 7 = 77$$

Here we divide 576 by 7, the quotient is 82, and the remainder 2, to which we annex the fraction $\frac{4}{7}$; and reduce $2\frac{4}{7}$ to an improper fraction $\frac{18}{7}$, and multiply its denominator by 7, which gives $\frac{18}{7}$.

Hitherto we have considered the fractions as abstract numbers, and laid down the necessary rules accordingly. We now proceed to apply these to practice. Shillings and pence may be considered as fractions of pounds, and lower denominations of any kind as fractions of higher; and any operation, where different denominations occur, may be wrought by expressing the lower ones in the form of vulgar fractions, and proceeding by the foregoing rules. For this purpose, the two following problems are necessary.

PROBLEM V. "To reduce lower denominations to fractions of higher, place the given number for the numerator, and the value of the higher for the denominator."

Example.

1. Reduce 7 d. to the fraction of a shilling. Ans. $\frac{7}{12}$.
2. Reduce 7 d. to a fraction of a pound. Ans. $\frac{7}{240}$.
3. Reduce 15 s. 7 d. to a fraction of a pound. Ans. $\frac{187}{240}$.

PROBLEM VI. "To value fractions of higher denominations, multiply the numerator by the value of the given denomination, and divide the product by the denominator; if there be a remainder, multiply it by the value of the next denomination, and continue the division."

Ex. 1st.] Required the value of $\frac{17}{80}$ of L. 1.

17

20

— s. d.

60)340 (5 8

300

40

12

60)480

480

0

2d.] Required the value of $\frac{8}{9}$ of 1 Cwt.

8

4

— qrs. lb.

9)32 (3 15 $\frac{1}{3}$

27

5

28

9)140

9

50

45

5

In the first example, we multiply the numerator 17 by 20, the number of shillings in a pound, and divide the product 340 by 60, the denominator of the fraction, and obtain a quotient of 5 shillings; then we multiply the remainder 40 by 12, the number of pence in a shilling, which produces 480, which divided by 60 quotes 8 d. without a remainder. In the second example we proceed in the same manner; but as there is a remainder, the quotient is completed by a fraction.

Sometimes the value of the fraction does not amount to a unit of the lowest denomination; but it may be reduced to a fraction of that or any other denomination, by multiplying the numerator according to the value of the places. Thus $\frac{1}{1120}$ of a pound is equal to $\frac{1}{1120}$ of a shilling, or $\frac{1}{1120}$ of a penny, or $\frac{1}{1120}$ of a farthing.

CHAP. IX. DECIMAL FRACTIONS.

Sect. i. NOTATION and REDUCTION.

THE arithmetic of vulgar fractions is tedious, and even intricate to beginners. The difficulty arises chiefly from the variety of denominators; for when numbers are divided into different kinds of parts, they cannot be easily compared. This consideration gave rise to the invention of decimal fractions, where the units are divided into like parts, and the divisions and subdivisions are regulated by the same scale which is used in the Arithmetic of Integers. The first figure of a decimal fraction signifies tenth parts, the next hundredth parts, the next thousandth parts, and so on; and the columns may be titled accordingly. Decimals are distinguished by a point, which separates them from integers, if any be prefixed.

The use of cyphers in decimals, as well as in integers, is to bring the significant figures to their proper places, on which their value depends. As cyphers, when placed on the left hand of an integers, have no signification, but when placed on the right hand, increase the value ten times each; so cyphers, when placed on the right hand of a decimal, have no signification; but when placed on the left hand diminish the value ten times each.

The notation and numeration of decimals will be obvious from the following examples:

- | | | |
|-------|-----------|---|
| 4.7 | signifies | Four, and seventh tenths-parts. |
| .47 | | Four tenth-parts, and seven hundredth-parts, or 47 hundredth-parts. |
| .047 | | Four hundredth-parts, and seven thousandth-parts, or 47 thousandth-parts. |
| .407 | | Fourtenths-parts, and seven thousandth-parts, or 407 thousandth-parts. |
| 4.07 | | Four, and seven hundredth-parts.] |
| 4.007 | | Four, and seven thousandth-parts. |

The column next the decimal point is sometimes called *decimal primes*, the next *decimal seconds*; and so on.

To reduce vulgar fractions to decimal ones: "Annex a cypher to the numerator, and divide it by the denominator, annexing a cypher continually to the remainder."

Ex.

Decimal Fractions.	Ex. 1st.	2d.	3d.
	$\frac{1}{75} = .16$	$\frac{1}{64} = .078125$	$\frac{1}{3} = .666$
	75)120(16	64)500(078125	3)20(666
	75	448	18
	450	520	* 20
	450	512	18
	0	80	20
		64	18
		160	20
		128	
		320	
		320	
4th.	$\frac{1}{6} = .833$	5th.	$\frac{1}{27} = .259$
	6)50(83		27)70(259
	48		54
	* 20		160
	18		135
	20		250
	18		243
	20		* 70
			180
			176
			* 40
			22
			180

The reason of this operation will be evident, if we consider that the numerator of a vulgar fraction is understood to be divided by the denominator; and this division is actually performed when it is reduced to a decimal.

In like manner, when there is a remainder left in division, we may extend the quotient to a decimal, instead of completing it by a vulgar fraction, as in the following example.

25)646(25.84.
50
146
125
Rem. 21.0
200
100
100
0

From the foregoing examples, we may distinguish the several kinds of decimals. Some vulgar fractions may be reduced exactly to decimals, as Ex. 1st and 2d, and are called *terminate* or *finite decimals*. Others cannot be exactly reduced, because the division always leaves a remainder; but, by continuing the division, we will perceive how the decimal may be extended to any length whatever. These are called *infinite decimals*. If the same figure continually returns, as in Ex. 3d and 4th, they are called *repeaters*. If two or more figures return in their order, they are called *circulates*. If this regular succession go on from the beginning, they are called *pure repeaters*, or *circulates*.

as Ex. 3d and 5th. If otherwise, as Ex. 4th and 6th, they are mixed repeaters or circulates, and the figures prefixed to those in regular succession are called the *finite part*. Repeating figures are generally distinguished by a dash, and circulates by a comma, or other mark, at the beginning and end of the circle; and the beginning of a repeater or circulate is pointed out in the division by an asterisk.

Lower denominations may be considered as fractions of higher ones, and reduced to decimals accordingly. We may proceed by the following rule, which is the same, in effect, as the former.

To reduce lower denominations to decimals of higher: "Annex a cypher to the lower denomination, and divide it by the value of the higher. When there are several denominations, begin at the lowest, and reduce them in their order."

Ex. To reduce 5 cwt. 2 qr. 21 lb. to a decimal of a ton?

28)210(.75	4)2.75(.6875	20)5.6874(.284375
196	24	40
140	35	168
140	32	160
0	30	87
	28	80
	20	75
	20	60
		150
		140
		100
		100
		0

Here, in order to reduce 21 lb. to a decimal of 1 qr. we annex a cypher, and divide by 28, the value of 1 qr. This gives .75. Then we reduce 2.75 qrs. to a decimal of 1 cwt. by dividing by 4, the value of 1 cwt. and it comes to .6875. Lastly, 5.6875 cwt. is reduced to a decimal of a ton by dividing by 20, and comes to .284375.

To value a decimal fraction: "Multiply it by the value of the denomination, and cut off as many decimal places from the product as there are in the multiplicand. The rest are integers of the lower denomination."

Example. What is the value of .425 of L. 1?

.425
20
8.500
6
3.000

Sect. ii. ARITHMETIC of TERMINATE DECIMALS.

THE value of decimal places decrease like that of integers, ten of the lower place in either being equal to one of the next higher; and the same holds in passing from decimals to integers. Therefore, all the operations are performed in the same way with decimals,

Decimal
Fractions.

whether placed by themselves or annexed to integers, as with pure integers. The only peculiarity lies in the arrangement and pointing of the decimals.

In addition and subtraction. "Arrange units under units, tenth-parts under tenth-parts, and proceed as in integers."

32.035	from 13.348	and 12.248
116.374	take 9.2993	10.6752
160.63		
12.3645	4.0487	1.5728

321.4035

In multiplication. "Allow as many decimal places in the product as there are in both factors. If the product has not so many places, supply them by pre-fixing cyphers on the left hand."

Ex. 1st.] 1.37	2d.] 43.75	3d.] .1572
1.8	.49	.12
1096	35000	.01864
137	17500	
2.466	21.0000	

The reason of this rule may be explained, by observing, that the value of the product depends on the value of the factors; and since each decimal place in either factor diminishes its value ten times, it must equally diminish the value of the product.

To multiply decimals by 10, move the decimal point one place to the right; to multiply by 100, 1000, or the like, move it as many places to the right as there are cyphers in the multiplier.

In division. "Point the quotient so that there may be an equal number of decimal places in the dividend as in the divisor and quotient together."

Therefore, if there be the same of decimal places in the divisor and dividend, there will be none in the quotient.

If there be more in the dividend, the quotient will have as many as the dividend has more than the divisor.

If there be more in the divisor, we must annex (or suppose annexed) as many cyphers to the dividend as may complete the number in the divisor, and all the figures of the quotient are integers.

If the divisor leave a remainder, the quotient may be extended to more decimal places; but those are not regarded in fixing the decimal point.

The reason for fixing the decimal point, as directed, may be inferred from the rule followed in multiplication. The quotient multiplied by the divisor produces the dividend; and therefore the number of decimal places in the dividend is equal to those in the divisor and quotient together.

The first figure of the quotient is always at the same distance from the decimal point, and on the same side as the figure of the dividend, which stands above the unit place of the first product. This also takes place in integers; and the reason is the same in both.

It was formerly observed, that numbers were diminished when multiplied by proper fractions, and increased when divided by the same. Thus, multiplication by fractions corresponds with division by integers; and division by fractions with multiplication by integers; when we multiply by $\frac{1}{2}$ or .5, we obtain the same an-

swer as when we divide by 2, and every integer has a correspondent decimal, which may be called its *reciprocal*. Multiplication by that decimal supplies the place of division by the integer, and division supplies the place of multiplication.

To find the reciprocal of any number, divide 1 with cyphers annexed by that number.

Ex. Required the reciprocal of 625.

$$625 \overline{) 1.000(.0016}$$

625

3750

3750

0

The product of any number multiplied by .0016 is the same as the quotient divided by 625. Example.

$$625 \overline{) 9375(15}$$

625

3125

3125

0

15.0000

Because .0016 is $\frac{1}{625}$ of unity, any number multiplied by that fraction will be diminished 625 times. For a like reason, the quotient of any number divided by .0016, will be equal to the product of the same multiplied by 625. Example.

$$.0016 \overline{) 516.0000(322500}$$

48.....

36

32

40

32

80

80

0

516

625

2580

1032

3096

322500

SECT. III. APPROXIMATE DECIMALS.

23

It has been shown that some decimals, though extended to any length, are never complete; and others, which terminate at last, sometimes consist of so many places, that it would be difficult in practice to extend them fully. In these cases, we may extend the decimal to three, four, or more places, according to the nature of the articles, and the degree of accuracy required, and reject the rest of it as inconsiderable. In this manner we may perform any operation with ease by the common rules, and the answers we obtain are sufficiently exact for any purpose in business. Decimals thus restricted are called *approximates*.

Shillings, pence, and farthings, may be easily reduced to decimals of three places, by the following rule. Take half the shillings for the first decimal place, and the number of farthings increased by one, if it amount to 24 or upwards; by two, if it amount to 48 or upwards; and by three, if it amount to 72 or upwards, for the two next places.

The reason of this is, that 20 shillings make a pound, two shillings is the tenth part of a pound; and therefore

Decimal Fractions.

fore half the number of shillings make the first decimal place. If there were 50 farthings in a shilling, or 1000 in a pound, the units of the farthings in the remainder would be thousandth-parts, and the tens would be hundredth-parts, and so would give the two next decimal places; but because there are only 48 farthings in a shilling, or 960 in a pound, every farthing is a little more than the thousandth-part of a pound; and since 24 farthings make 25 thousand-parts, allowance is made for that excess by adding 1 for every 24 farthings, as directed.

If the number of farthings be 24, 48, or 72, and consequently the second and third decimal places 25, 50, and 75, they are exactly right; otherwise they are not quite complete, since there should be an allowance of $\frac{1}{24}$, not only for 24, 48, and 72 farthings, but for every other single farthing. They may be completed by the following rule: Multiply the second and third decimal places, or their excess above 25, 50, 75, by 4. If the product amount to 24 or upwards, add 1; if 48, add 2; if 72, add 35. By this operation we obtain two decimal places more; and by continuing the same operation, we may extend the decimal till it terminate in 25, 50, 75, or in a repeater.

Decimals of sterling money of three places may easily be reduced to shillings, pence, and farthings, by the following rule: Double the first decimal place, and if the second be 5 or upwards, add 1 thereto for shillings. Then divide the second and third decimal places, or their excess above 50, by 4, first deducting 1, if it amount to 25, or upwards; the quotient is pence, and the remainder farthings.

As this rule is the converse of the former one, the reason of the one may be inferred from that of the other. The value obtained by it, unless the decimal terminate in 25, 50, or 75, is a little more than the true value; for there should be a deduction, not only of 1 for 25, but a like deduction of $\frac{1}{25}$ on the remaining figures of these places.

We proceed to give some examples of the arithmetic of approximates, and subjoin any necessary observations.

ADDITION.			SUBTRACTION.		
Cwt.	qrs.	lb.	Cwt.	qrs.	lb.
3	2	14	3	2	2
		= 3.625			= 3.51785
2	3	22	1	1	19
		= 2.94642			= 1.41964
3	3	19			
		= 3.91964			
4	1	25	2	—	9
		= 4.47321			= 2.09821
14	3	24			
		= 14.96427			

If we value the sum of the approximates, it will fall a little short of the sum of the articles, because the decimals are not complete.

Some add 1 to the last decimal place of the approximate, when the following figure would have been 5, or upwards. Thus the full decimal of 3 qrs. 22 lb. is .946428571, and therefore .94643 is nearer to it than .94642. Approximates, thus regulated, will in general give exacter answers, and sometimes above the true one, sometimes below it.

The mark + signifies that the approximate is less than the exact decimal, or requires something to be added. The mark — signifies that it is greater, or requires something to be subtracted.

MULTIPLICATION.

8278 +	Meth. 2.] 8278	Meth. 3.] 8278
2153 +	2153	3512
24834	16556	16556
41390	8278	827
8278	41390	413
16556	24834	24
1782 2534	1782 2534	1782

Here the four last places are quite uncertain. The right-hand figure of each particular product is obtained by multiplying 8 into the figures of the multiplier; but if the multiplicand had been extended, the carriage from the right-hand place would have been taken in; consequently the right-hand place of each particular product, and the four places of the total product, which depend on these, are quite uncertain. Since part of the operation therefore is useless, we may omit it; and, for this purpose, it will be convenient to begin (as in p. 296. col. 1. *fifth* variety) at the highest place of the multiplier. We may perceive that all the figures on the right hand of the line in Meth. 2. serve no purpose, and may be left out, if we only multiply the figures of the multiplicand, whose products are placed on the right hand of the line. This is readily done by inverting the multiplier in Meth. 3. and beginning each product with the multiplication of that figure which stands above the figure of the multiplier that produces it, and including the carriage from the right-hand place.

If both factors be approximates, there are as many uncertain places, at least in the product, as in the longest factor. If only one be an approximate, there are as many uncertain places as there are figures in that factor, and sometimes a place or two more, which might be affected by the carriage. Hence we may infer, how far it is necessary to extend the approximates, in order to obtain the requisite number of certain places in the product.

DIVISION.

3724 —	798 64327 + (2144 or 3724) 798	64327	2144
744 8	7448		
53 84	538		
37 24	372		
16 602	166		
14 896	148		
1 7063	18		
1 4892	14		
2171	4		

Here all the figures on the right hand of the line are uncertain; for the right hand figure of the first product 7448 might be altered by the carriage, if the divisor were extended; and all the remainders and dividu- als that follow are thereby rendered uncertain. We may admit these useless figures; for which purpose, we dash a figure on the right hand of the divisor at each step, and neglect it when we multiply by the figure of the quotient next obtained; but we include the carriage. The operation, and the reason of it, will appear clear, by comparing the operation at large, and contracted, in the above example.

CHAP. X. INTERMINATE DECIMALS.

29

SECT. I. REDUCTION OF INTERMINATE DECIMALS.

As the arithmetic of interminate decimals, otherwise called the *arithmetic of infinites*, is facilitated by comparing them with vulgar fractions, it will be proper to inquire what vulgar fractions produce the several kinds of decimals, terminate or interminate, repeaters or circulates, pure or mixed. And, first, we may observe, that vulgar fractions, which have the same denominator, produce decimals of the same kind. If the decimals corresponding to the numerator 1 be known, all others are obtained by multiplying these into any given numerator, and always retain the same form, providing the vulgar fraction be in its lowest terms.

Thus, the decimal equal to $\frac{1}{7}$ is .142857,
which multiplied by

3

produces the decimal equal to $\frac{3}{7}$. 428571,

Secondly, If there be cyphers annexed to the significant figures of the denominator, there will be an equal number of additional cyphers prefixed to the decimal. The reason of this will be evident, if we reduce these vulgar fractions to decimals, or if we consider that each cypher annexed to the denominator diminishes the value of the vulgar fraction ten times, and each cypher prefixed has a like effect on the value of the decimal.

Thus, $\frac{1}{7} = .142857$, $\frac{2}{7} = .285714$, $\frac{3}{7} = .428571$,
 $\frac{4}{7} = .571428$, $\frac{5}{7} = .714285$, $\frac{6}{7} = .857142$,

We may therefore confine our attention to vulgar fractions, whose numerator is 1, and which have no cyphers annexed to the significant figures of the denominator.

Thirdly, Vulgar fractions, whose denominators are 2 or 5, or any of their powers, produce terminate decimals; for if any power of 2 be multiplied by the same power of 5, the product is an equal power of 10, as appears from the following table:

2	×	5	=	10
2 ² or 4	×	5 ² or 25	=	100 or 10 ²
2 ³ or 8	×	5 ³ or 125	=	1000 or 10 ³
2 ⁴ or 16	×	5 ⁴ or 625	=	10000 or 10 ⁴
2 ⁵ or 32	×	5 ⁵ or 3125	=	100000 or 10 ⁵

And the reason is easily pointed out; for $2^3 \times 5^3 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$; or, because the factors may be taken in any order, $= 2 \times 5 \times 2 \times 5 \times 2 \times 5$; and this, if we multiply the factors by pairs, becomes $10 \times 10 \times 10$, or 10^3 . The like may be shown of any other power. And we may infer, that if any power of 10 be divided by a like power of 2 or 5, the quotient will be an equal power of 5 or 2 respectively, and will come out exact, without a remainder; and, since the vulgar fractions above mentioned are reduced to decimals by some such division, it follows that the equivalent decimals are terminate.

The number of places in the decimals is pointed out by the exponent of the power; for the dividend must be a like power of 10, or must have an equal number of cyphers annexed to 1, and each cypher of the dividend gives a place of the quotient.

Ex. $\frac{1}{32} = .03125$, a decimal of 5 places, and $32 = 2^5$. Interminate
Decimals.

32) 1.00000 (.03125
96...

40

32

80

64

160

160

Again, no denominators except 2, 5, or their powers, produce terminate decimals. It is obvious from p. 298. col. 2. par. 4. that if any denominator which produces a terminate decimal be multiplied thereby, the product will consist of one, with cyphers annexed; and consequently the lowest places of the factors, multiplied into each other, must amount to 10, 20, or the like, in order to supply a cypher for the lowest place of the product; but none of the digits give a product of this kind, except 5 multiplied by the even numbers; therefore one of the factors must terminate in 5, and the other in an even number. The former is measured by 5, and the latter by 2, as was observed p. 297. col. 2. par. 7. Let them be divided accordingly, and let the quotients be multiplied. This last product will be exactly one tenth-part of the former; and therefore will consist of 1, with cyphers annexed, and the factors which produce it are measured by 5 and 2, as was shown before. This operation may be repeated; and one of the factors may be divided by 5, and the other by 2, till they be exhausted; consequently they are powers of 5 and 2.

Fourthly, Vulgar fractions, whose denominators are 3 or 9, produce pure repeating decimals.

Thus, $\frac{1}{3} = .333$, $\frac{2}{3} = .666$,
 $\frac{1}{9} = .111$, $\frac{2}{9} = .222$, $\frac{3}{9} = .333$,
 $\frac{4}{9} = .444$, $\frac{5}{9} = .555$, $\frac{6}{9} = .666$,
 $\frac{7}{9} = .777$, $\frac{8}{9} = .888$.

The repeating figure is always the same as the numerator. Hence we infer, that repeating figures signify ninth-parts; a repeating 3 signifies $\frac{3}{9}$; a repeating 6 signifies $\frac{6}{9}$, and a repeating 9 signifies $\frac{9}{9}$, or 1.

The value of repeating decimals may also be illustrated by collecting the values of the different places; for example, let the value of $.111$ be required; the first decimal place signifies $\frac{1}{10}$, the next $\frac{1}{100}$, the next $\frac{1}{1000}$. The sum of the two first places is $\frac{11}{100}$, of the three places $\frac{111}{1000}$, and so on. If we subtract these values successively from $\frac{1}{9}$, the first remainder is $\frac{1}{90}$, the second $\frac{1}{900}$, the third $\frac{1}{9000}$. Thus, when the value of the successive figures is reckoned, the amount of them approaches nearer and nearer to $\frac{1}{9}$; and the difference becomes ten times less for each figure assumed; and, since the decimal may be extended to any length, the difference will at last become so small, that it need not be regarded. This may give a notion of a decreasing series, whose sum may be exactly ascertained, though the number of terms be unlimited.

Fifthly, Vulgar fractions, whose denominators are a product of 3 or 9 multiplied by 2, 5, or any of their powers, produce mixed repeaters. The reason of this will be evident, if, in forming the decimal, we divide the numerator successively by the component parts of the denominator, as directed p. 297. col. 1. par. ult.

&c.

Interminate Decimals. &c. The divisor is 2, 5, or some of their powers, and consequently gives a finite quotient by p. 316. col. 1. par. 3, &c. The second divisor is 3 or 9; and therefore, when the figures of the dividend are exhausted, and figures annexed to the remainder, the quotient will repeat, by p. 316. col. 2. par. 2.

Ex. $\frac{1}{144}$ $144 = 16 \times 9$.

144)1.000(.00694	or 16)1.00(.0625
864	96.00694
1360	40
1296	32
* 640	80
576	80
640	0

In order to illustrate this subject further, we shall explain the operation of casting out the threes, which resembles that for casting out the nines, formerly laid down, p. 300. col. 2. par. 4.—p. 301. col. 2. par. 3. and depends on the same principles, being a method of finding the remainder of a number divided by 3. If the same number be divided by 3 and by 9, the remainders will either agree, or the second remainder will exceed the first by 3 or by 6. The reason of this will be obvious, if we suppose a collection of articles assorted into parcels of 3, and afterwards into parcels of 9, by joining three of the former together. If the lesser parcels be all taken up in composing the greater ones, the remainder will be the same at the end of the second assortment as before: but if one of these lesser parcels be left over, the remainder will be more, and if two of them be left over, the remainder will be 6 more. Therefore, when the nines are cast out from any number, and the result divided by 3, the remainder is the same as when the number is divided by 3: Thus, the results on casting out the 3's may be derived from those obtained by casting out the 9's; and the same correspondence which was pointed out with respect to the latter, for proving the operations of arithmetic, applies also to the former.

To cast out the 3's from any number, add the figures, neglecting 3, 6, and 9; and when the sum amounts to 3, 6, or 9, reject them and carry on the computation with the excess only. For example, take 286754: in casting out the 3's we compute thus, 2 and 8 is 10, which is three times 3, and 1 over; 1 and (passing by 6) 7 is 8, which is twice 3 and 2 over; 2 and 5 is 7, which is twice 3 and 1 over; lastly, 1 and 4 is 5, which contains 3 once, and 2 over, so the result is 2.

If the 3's be cast out from 2^2 or 4, the result is 1; from 2^3 or 8, the result is 2; from 2^4 or 16, the result is 1; and universally the odd powers of 2 give a result of 2, and the even powers give a result of 1. As every higher power is produced by multiplying the next lower by 2, the result of the product may be found by multiplying the result of the lower power by 2, and casting out the 3's if necessary. Therefore, if the result of any power be 1, that of the next higher is 2, and that of the next higher (4 with the 3's cast out or) 1. Thus the results of the powers of 2 are 1 and 2 by turns; also, because the result of 5, when the 3's are cast out, is 2, its powers will have the same results as the corresponding powers of 2.

Interminate Decimals. If the denominator be a product of an even power of 2 or 5, multiplied by 3, the repeating figure of the corresponding decimal is 3; but, if it be the product of an odd power, the repeating figure is 6. For, in forming the decimal, we may divide by the component parts of the denominator, and the first divisor is a power of 2 or 5; therefore the first quotient is a like power of 4 or 2 (p. 316. col. 1. par. 3. &c.) and this power is again divided by 3. If it be an even power, the remainder or result is 1, as was demonstrated above; and if cyphers be annexed to the remainder, and the division continued, it quotes a repeating 3; but if it be an odd power, the remainder is 2, and the quotient continued by annexing cyphers is a repeating 6.

If the denominator be 9, multiplied by 2, or any of its powers, the repeating figure may be found by casting out the 9's from the corresponding power of 5; and if it be multiplied by 5, or any of its powers, by casting out the 9's from the corresponding power of 2. For if the decimal be formed by two divisions, the first quotes the corresponding power; and the second, because the divisor is 9, repeats the resulting figure after the dividend is exhausted.

If any mixed repeater be multiplied by 9, the product is a terminate decimal, and may be reduced (p. 316. col. 1. par. 3. &c.) to a vulgar fraction, whose denominator is 2, 5, or some of their powers; therefore all mixed repeaters are derived from vulgar fractions, whose denominators are products of 2, 5, or their powers, multiplied by 3 or 9.

Sixthly, All denominators, except 2, 5, 3, 9, the powers of 2 and 5, and the products of these powers, multiplied by 3 or 9, produce circulating decimals. We have already shown, that all terminate decimals are derived from 2, 5, or their powers; all pure repeaters, from 3 or 9; and all mixed repeaters, from the products of the former multiplied by the latter. The number of places in the circle is never greater than the denominator diminished by unity. Thus $\frac{1}{7}$ produces .142857, a decimal of 6 places; and $\frac{1}{17}$ produces .0588235294117647, a decimal of 16 places. The reason of this limit may be inferred from the division; for whenever a remainder which has recurred before, returns again, the decimal must circulate, and the greatest number of possible remainders is one less than the divisor: But frequently the circle is much shorter. Thus $\frac{1}{11} = .09$, a circle of 2 places.

When a vulgar fraction, whose numerator is 1, produces a pure circulate, the product of the circle multiplied by the denominator will consist of as many 9's as there are places in the circle. Thus $\frac{1}{7} = .142857$, which multiplied by 7 produces 999999. The like holds in every decimal of the same kind; for they are formed by dividing 10, or 100, or 1000, or some like number by the denominator, and the remainder is 1, when the decimal begins to circulate; for the division must be then exactly in the same state as at the beginning: Therefore, if the dividend had been less by 1, or had consisted entirely of 9's, the division would have come out without a remainder; and since the quotient multiplied by the divisor produces the dividend, as was shown p. 298. col. 2. par. 3. it follows, that the circulating figures, multiplied by the denominator, produce an equal number of 9's.

Every vulgar fraction, which produces a pure circulate,

Interminate
Decimals.

late, is equal to one whose numerator is the circulating figures, and its denominator a like number of 9's. If the numerator be 1, the vulgar fraction is reduced to that form by multiplying both terms into the circle of the decimal; and if the numerator be more than 1, the equivalent decimal is found by multiplying that which corresponds to the numerator 1 into any other numerator.

$$\begin{aligned} \text{Thus } \frac{1}{7} &= .142857, = \frac{142857}{999999} \text{ and } \frac{1}{37} = .027 = \frac{27}{999} \\ \frac{2}{7} &= .285714, = \frac{285714}{999999} \quad \frac{2}{37} = .054 = \frac{54}{999} \\ \frac{3}{7} &= .428571, = \frac{428571}{999999} \quad \frac{3}{37} = .216 = \frac{216}{999} \end{aligned}$$

Hence we may infer, that pure circulates are equal in value to vulgar fractions whose numerators consist of the circulating figures, and denominators of as many 9's as there are places in the circle. To place this in another point of view, we shall reduce a vulgar fraction, whose numerator consists entirely of 9's, to a decimal.

$$\begin{array}{r} \frac{375}{999} \quad 999)375000(.375, \\ \underline{2997} \\ 7530 \\ \underline{6993} \\ 5370 \\ \underline{4995} \\ *375 \end{array}$$

The remainder is now the same as the dividend, and therefore the quotient must circulate, and, in general, since any number with 3 cyphers annexed, may be divided by 1000, without a remainder, and quotes the significant figures; therefore, when divided by 999, it must quote the same figures, and leave an equal remainder. This also applies to every divisor which consists entirely of 9's. Circles of two places, therefore, signify ninety ninth-parts; circles of 3 places signify nine hundred and ninety ninth-parts; and so on.

The value of circulating decimals may also be illustrated by adding the values of the places. Thus, if two figures circulate, the first circle signifieth hundredth-parts, and every following circle signifies one hundred times less than the preceding; and their values added, as in p. 316. col. 2. par. 3. will approach nearer to ninety ninth-parts than any assigned difference, but will never exactly complete it.

All denominators which are powers of 3, except 9, produce pure circulates; and the number of places in the circle is equal to the quotient of the denominator divided by 9.

Thus, $\frac{1}{27} = .037$, a circle of 3 places, and 27 divided by 9 = 3
 $\frac{1}{81} = .012345679$,
 divided by 9 = 9.

These decimals may be formed, by dividing the numerator by the component parts of the denominator. In the first example, the component parts of the numerator are 9 and 3. The division by 9 quotes a pure circulate, and the circulating figure is not 3, 6, or 9, if the vulgar fraction be in its lowest terms. And any other repeating figure divided by 3, quotes a pure circulate of 3 places; for the first dividual must leave a

6

remainder of 1 or 2. If the first remainder be 1, the second remainder is 2, (because, if 1 be prefixed to the repeating figure, and the 3's be cast out, the result is 2;) and, for a like reason, the third dividual clears off without a remainder. If the first remainder be 2, the second is (twice 2 or 4, with the 3's cast out, or) 1, and the third 0; so the circle is always complete at three places, and the division begins anew. The sum of such a circle cannot be a multiple of 3; for since the repeating figure is not 3, nor any of its multiples, the sum of 3 places is not a multiple of 9, and therefore cannot be divided by 9, nor twice by 3, without a remainder.

Again, if the decimal equal to $\frac{1}{27}$ be divided by 3, we shall obtain the decimal equal to $\frac{1}{81}$. The dividend, as we have shown already, is a pure circulate of 3 places, whose sum is not a multiple of 3. Therefore, when divided by 3, the first circle leaves a remainder of 1 or 2, which being prefixed to the second, and the division continued, the remainder, at the end of the second circle, is 2 or 1, and, at the end of the third circle, there is no remainder; all which may be illustrated by casting out the 3's. The division being completed at 9 places, finishes the circle; and it may be shown, as before, that the sum of these places is not a multiple of 3. The learner will apprehend all this if he reduce these, or the like vulgar fractions, to decimals, by successive divisions.

$$\begin{aligned} 27 &= 9 \times 3, \text{ and } 9)1.0(.111\bar{1}, \text{ and } 3).111\bar{1}(.037, \\ 81 &= 27 \times 3, \text{ and } 3)037,037,037(.012345679. \end{aligned}$$

For the same reason, if any circulating decimal, not a multiple of 3, be divided by 3, the quotient will circulate thrice as many places as the dividend; and if any circulate obtained by such division be multiplied by 3, the circle of the product will be restricted to one third of the places in the multiplicand.

All vulgar fractions, whose denominators are multiples of 2, 5, or their powers, except those already considered, produce mixed circulates; for they may be reduced by dividing by the component parts of the denominator. The first divisor is 2, 5, or some of their powers, and therefore gives a finite quotient. The second divisor is none of the numbers enumerated p. 317. col. 2. par. 2. and therefore gives a circulating quotient when the significant figures of the dividend are exhausted, and cyphers annexed to the remainder.

$$\begin{array}{r} \text{Ex. } \frac{1}{216} \\ 216)1.000(.004,629, \text{ or } 8)1.000 \\ \underline{864} \\ *1360 \\ \underline{1296} \\ 640 \\ \underline{432} \\ 2080 \\ \underline{1944} \\ *1360 \end{array} \quad \begin{array}{r} 216 = 27 \times 8, \\ 8)1.000 \\ \underline{27) .125(.004,629,} \\ \underline{108} \\ *170 \\ \underline{162} \\ 80 \\ \underline{54} \\ 260 \\ \underline{243} \\ 17 \end{array}$$

All mixed circulates are derived from vulgar fractions

tions

Interminate
Decimals

tions of this kind, whose denominators are multiples of 2, 5, or their powers; and therefore all other denominators, except 3 and 9, produce pure circulates. The reader will easily perceive, that when a decimal is formed from a vulgar fraction, whose numerator is 1, when the remainder 1 occurs in the division, the decimal is a pure circulate; but if any other remainder occurs twice, the decimal is a mixed circulate. We are to show that this last will never happen, unless the divisor be a multiple of 2, 5, or their powers. If two numbers be prime to each other, their product will be prime to both; and if two numbers be proposed, whereof the first does not measure the second, it will not measure any product of the second, if the multiplier be prime to the first. Thus, because 7 does not measure 12, it will not measure any product of 12 by a multiplier prime to 7. For instance, it will not measure 12×3 , or 36. Otherwise, the quotient of 12 divided by 7, or $1\frac{5}{7}$ multiplied by 3, would be a whole number, and 5×3 would be measured by 7, which it cannot be, since 5 and 3 are both prime to 7.

Now, if we inspect the foregoing operation, we shall perceive that the product of 136, the remainder where the decimal begins to circulate, multiplied by 999, is measured by the denominator 216. But 999 is not measured by the denominator, otherwise the decimal would have been a pure circulate; therefore 126 and 136 are not prime to each other, but have a common measure, and that measure must apply to 864, a multiple of 126, and to 1000, the sum of 136 and 864; see p. 309, col. 2. par. ult. &c. But it was proven, p. 316. col. 1. par. 1. that no numbers, except the powers of 5 and 2, measure a number consisting of 1 with cyphers annexed; consequently the denominator must be measured by a power of 2 or 5. The reader will perceive, that the exponent of the power must be the same as the number of cyphers annexed to 1, or as the number of figures in the finite part of the decimal.

We shall now recapitulate the substance of what has been said with respect to the formation of decimals. 2, 5, and their powers, produce finite decimals, by p. 316. col. 1. par. 3. &c. and the number of places is measured by the exponent of the power. 3 and 9 produce pure repeaters (p. 316. col. 2. par. 2.) The products of 2, 5, and their powers, by 3 or 9, produce mixed repeaters by p. 316. col. 2. par. ult.; their products by other multipliers, produce mixed circulates by p. 316. col. 2 par. ult.; and all numbers of which 2 and 5 are not aliquot parts, except 3 and 9, produce pure circulates. To find the form of a decimal corresponding to any denominator, divide by 2, 5, and 10, as often as can be done without a remainder; the number of divisions shows how many finite places there are in the decimal, by p. 318. col. 2. par. 3. If the dividend be not exhausted by these divisions, divide a competent number of 9's by the last quotient, till the division be completed without a remainder: the number of 9's required show how many places there are in the circle; and the reason may be inferred from p. 317. col. 2. par. 5.

We shall conclude this subject by marking down the decimals produced by vulgar fractions, whose numerator is 1, and denominators 30; and under that the reader may observe their connection with the denominators.

$\frac{1}{2} = .5$	$\frac{1}{10} = .0625$
$\frac{1}{3} = .333$	$\frac{1}{11} = .0588235294117647,$
$\frac{1}{4} = .25$	$\frac{1}{12} = .0555$
$\frac{1}{5} = .2$	$\frac{1}{13} = .052631578947368421,$
$\frac{1}{6} = .1666$	$\frac{1}{14} = .05$
$\frac{1}{7} = .142857,$	$\frac{1}{15} = .047619,$
$\frac{1}{8} = .125$	$\frac{1}{16} = .04545,$
$\frac{1}{9} = .111$	$\frac{1}{17} = .0434782608695652173913,$
$\frac{1}{10} = .1$	$\frac{1}{18} = .041666$
$\frac{1}{11} = .0909,$	$\frac{1}{19} = .04$
$\frac{1}{12} = .08333,$	$\frac{1}{20} = .0384615,$
$\frac{1}{13} = .076923,$	$\frac{1}{21} = .037,$
$\frac{1}{14} = .0714285$	$\frac{1}{22} = .03571428$
$\frac{1}{15} = .0666$	$\frac{1}{23} = .0344827586206896551724137931,$
	$\frac{1}{24} = .0333$

Interminate
Decimals.

RULES for reducing interminate decimals to vulgar fractions.

- I. "If the decimal be a pure repeater, place the repeating figure for the numerator, and 9 for the denominator."
- II. "If the decimal be a pure circulate, place the circulating figures for the numerator, and as many 9's as there are places in the circle for the denominator."
- III. "If there be cyphers prefixed to the repeating or circulating figures, annex a like number to the 9's in the denominator."
- IV. "If the decimal be mixed, subtract the finite part from the whole decimal. The remainder is the numerator; and the denominator consists of as many 9's as there are places in the circle, together with as many cyphers as there are finite places before the circle."

Thus, $235,62 = \frac{23562}{10000}$
From the whole decimal 23562
We subtract the finite part 235

and the remainder 23327 is the numerator.

The reason may be illustrated by dividing the decimal into two parts, whereof one is finite, and the other a pure repeater or circulate, with cyphers prefixed. The sum of the vulgar fractions corresponding to these will be the value of the decimal sought.

$.235,62$, may be divided into $.235 = \frac{235}{1000}$ by rule I. and $.000,62 = \frac{62}{10000}$ by rules II. III.

In order to add these vulgar fractions, we reduce them to a common denominator; and, for that purpose, we multiply both terms of the former by 99, which gives $\frac{23327}{99000}$; then we add the numerators

235 or by method explained p. 295. col. 1. par. 3.

99		Sum of numerators.
2115	23500	23265 or 23562
2115	235	62 235
23265	23265	23327 23327

The value of circulating decimals is not altered, though one or more places be separated from the circle, and considered as a finite part, providing the circle be completed. For example, $.27$ may be written $.2,72$, which is reduced by the last of the foregoing rules to $\frac{27}{100}$, or $\frac{27}{100}$, which is also the value of $.27$. And if two or more circles be joined, the value of the decimal is still the same. Thus, $.2727 = \frac{2727}{10000}$, which is reduced by dividing the terms by 101 to $\frac{27}{100}$.

All

3d.]

Interminate
Decimals.

3d.]

.714285, X 54,

54

2859142

35714285

38,571428 571428 571428,

385714 285714 285714,

3857 142857 142857,

38 571428 571428,

385714 285714,

3857 142875,

38 571428,

385714,

3857,

38,

38.961038,961038,961038,

It is evident, that if a repeating multiplier be extended to any length, the product arising from each figure will be the same as the first, and each will stand one place to the right hand of the former. In like manner, if a circulating multiplier be extended, the product arising from each circle will be alike, and will stand as many places to the right hand of the former as there are figures in the circle. In the foregoing examples, there are as many of these products repeated as is necessary for finding the total product. If we place down more, or extend them further, it will only give a continuation of the repeaters or circulates.

This is obvious in Ex. 1st and 2d. As the learner may not apprehend it so readily in Ex. 3d, when the multiplicand is a circulate, and consequently each line of the product is also a circulate, we have divided it into columns, whose sums exhibit the successive circles. The sum of the first column is 38,961037, and there is a carriage of 1 from the right hand column, which completes 38,961038. This one is supplied from the three first lines of the second column, the sum of which is 999999, and being increased by 1, in consequence of the carriage from the third column, amounts to 1,000000, and therefore carries 1 to the first column, and does not affect the sum of the remaining lines, which are the same as those of the first column. The third column contains two sets of these lines, which amount to 999999, besides the line which compose the circle. Each of these sets would be completed into 1,000000 by the carriage from the 4th column, if extended, and each would carry 1 to the second column. One of these would complete the sum of the three first lines, and the other would complete the sum of the circle. In like manner, if the circles be extended ever so far, the increasing carriages will exactly answer for the increasing deficiencies, and the sum will be always a continuation of the circle: but the product could not circulate, unless the sum of the lines marked off in the second column had consisted entirely of 9's; or had been some multiple of a number of 9's; and the circles must be extended till this take place, in order to find the complete product.

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The multiplication of intermediate decimals may be often facilitated, by reducing the multiplier to a vulgar fraction, and proceeding as directed p. 311. col. 1. par. 6.

Thus,

4th.] $.3824 \times \frac{1}{7} = \frac{7}{9}$

7

9)2.6768

.9742

5th.] $.384 \times .28 = \frac{2}{9}$

23

2

1152

23

768

90)8.832

.09813

Therefore, in order to multiply by 3, we take one third part of the multiplier; and to multiply by 6, we take two thirds of the same. Thus,

6th.] $.784 = .3 \times \frac{1}{3}$

7th.] $.8761 \times .6 = \frac{2}{3}$

2

3).784

.2613

3)1.7522

.58406

As the denominator of the vulgar fractions always consists of 9's or of 9's with cyphers annexed, we may use the contraction explained p. 298. col. 1. par. ult. &c.; and this will lead us exactly to the same operation which was explained p. 320. col. 2. par. ult. &c. on the principles of decimal arithmetic.

8th.] $.735 \times .3,26 = \frac{1}{9} \frac{2}{9}$

323

3

2205

323

1470

2205

99)237405

2374,05

23,74

,23

.239803,

9th.] $.278 \times 365 = \frac{1}{9} \frac{6}{9}$

365

1390

1668

834

999)101470,

101,

.101,571,

When the multiplier is a mixed repeater or circulate, we may proceed as in Ex. 5th and 8th; or we may divide the multiplier into two parts, of which the first is finite, and the second a pure repeater or circulate, with cyphers prefixed, and multiply separately by these, and add the products.

Thus, $.384 \times .28$ or by $.2 = .0768$ or thus, $.384$
and by $.05 = .02138$ $.28$

.09813

9)1920

2138

768

.09813

In the following examples, the multiplicand is a repeater; and therefore the multiplication by the numerator of the vulgar fraction is performed as directed p. 320. col. 2. par. 2.

Sf

10th.]

10th.] $.683 \times .8 \frac{1}{2} = \frac{11}{16}$

$$\begin{array}{r} 9) 3.416 (.37,962, \\ \underline{27} \\ 71 \\ \underline{63} \\ * 86 \\ 81 \\ \underline{56} \\ 54 \\ \underline{26} \\ 18 \\ \underline{* 86} \end{array}$$

11th.] $.63 \times .2,39 = \frac{217}{1000}$

$$\begin{array}{r} .237 \quad 2 \\ \underline{448} \quad 237 \\ 1898 \\ \underline{12668} \\ 99) 15010 (.15,16, \\ \underline{99} \\ 511 \\ \underline{495} \\ * 160 \\ 99 \\ \underline{610} \\ 594 \\ \underline{* 16} \end{array}$$

In the following examples the multiplicand is a circulate, and therefore the multiplication by the numerator is performed as directed p. 320. col. 2. par. 4.

12th.] $.3,81, \times 53 = \frac{48}{100}$

$$\begin{array}{r} 48 \quad 5 \\ \underline{3054 \quad 48} \\ 15272 \end{array}$$

910) 183,27, (.203,63,

$$\begin{array}{r} 18 \\ \underline{* 032} \\ 27 \\ \underline{57} \\ 54 \\ \underline{* 32} \end{array}$$

13th.] $.12, \times 03, = \frac{3}{100}$

99) 36,36 (.036730945821854912764,

$$\begin{array}{r} 666 \\ 723 \\ 306 \\ 936 \\ 453 \\ 576 \\ 813 \\ 216 \\ 183 \\ 846 \\ 543 \\ 486 \\ 903 \\ 126 \\ 273 \\ 756 \\ 633 \\ 396 \\ * 036 \end{array}$$

In Ex. 13th, we have omitted the products of the divisor, and only marked down the remainders. These are found, by adding the left hand figure of the dividend to the remaining figures of the same. Thus, 363 is the first dividend, and 3 the left-hand figure, added to 63, the remaining figures gives 66 for the first remainder; and the second dividend, 666, is completed by annexing the circulating figure 6. The reason of which may be explained as follows. The highest place of each dividend shows, in this example, how many hundreds it contains; and as it must contain an equal number of ninety-nines, and also an equal number of units, it follows, that these units, added to the lower places, must show how far the dividend exceeds that number of ninety-nines. The figure of the quotient is generally the same as the first place of the dividend, sometimes one more. This happens in the last step of the foregoing example, and is discovered when the remainder found, as here directed, would amount to 99, or upwards; and the excess above 99 only, must in that case be taken to complete the next dividend.

14th.] $.01, \times .01, = \frac{1}{100}$

99) .01, (000102030405060708091011121314151617181920

$$\begin{array}{l} (2122232425262728293031323334353637383940 \\ (4142434445464748495051525354555657585960 \\ (6162636465666768697071727374757677787980 \\ (81828384858687888990919293949596979899 \end{array}$$

The number of places in the circle of the product is sometimes very great, though there be few places in the factors: but it never exceeds the product of the denominator of the multiplier, multiplied by the number of places in the circle of the multiplicand. Therefore, if the multiplier be 3 or 6, the product may circulate three times as many places as the multiplicand; if the multiplier be any other repeater, nine times as many; if the multiplier be a circulate of two places, ninety-nine times as many; thus, in the last example, .01, a circulate of two places, multiplied by .01, a circulate of two places, produces a circulate of twice 99, or 198 places. And the reason of this limit may be inferred from the nature of the operation; for the greatest possible number of remainders, including 0, is equal to the divisor 99; and each remainder may afford two dividends, if both the circulating figures, 3 and 6, occur to be annexed to it. If the multiplier circulate three places, the circle of the product, for a like reason, may extend nine hundred and ninety-nine times as far as that of the multiplicand. But the number of places is often much less.

The multiplication of interminate decimals may be proven, by altering the order of the factors (p. 295. col. 2. par. 2.) or by reducing them both to vulgar fractions in their lowest terms, multiplying these as directed p. 310. col. 2. par. 3. and reducing the product to a decimal.

SECT. IV. DIVISION OF INTERMINATE DECIMALS.

CASE I. "When the dividend only is interminate, proceed as in common arithmetic; but, when the figures of the dividend are exhausted, annex the repeating figure, or the circulating figures in their order, instead of cyphers, to the remainder."

Ex.

Interminate Ex. 1st.] Divide .5376 by 7.
Decimals. 7).5376(.76,095238,

2d.] Divide .843 by 5.
5).843(.1686

The foregoing method is the only one which properly depends on the principles of decimal arithmetic; but it is generally shorter to proceed by the following rule.

“ Reduce the divisor to a vulgar fraction, multiply the dividend by the denominator, and divide the product by the numerator.”

Ex. 1st.] Divide .37845 by $g = \frac{8}{9}$

$$\begin{array}{r} 9 \\ 5)3.40605(.68121 \end{array}$$

2d.] Divide .37848 by $\phi = \frac{2}{3}$

$$\begin{array}{r} 3 \\ 2)1.13538(.567683 \end{array}$$

Note 1. Division by 3 triples the dividend, and division by 6 increases the dividend one-half.

Note 2. When the divisor circulates, the denominator of the vulgar fraction consists of 9's, and the multiplication is sooner performed by the contraction explained p. 295. col. 1. par. 1. It may be wrought in the same way, when the divisor repeats, and the denominator, of consequence, is 9.

Note 3. If a repeating dividend be divided by a repeating or circulating divisor; or, if a circulating dividend be divided by a similar circulating dividend; or, if the number of places in the circle of the divisor be a multiple of the number in the dividend; then the product of the dividend multiplied by the denominator of the divisor will be terminate, since like figures are subtracted from like in the contracted multiplication, and consequently no remainder left. The form of the quotient depends on the divisor, as explained at large, p. 316. col. 1. par. 1.—p. 318. col. 2. par. 3.

Note 4. In other cases, the original and multiplied dividend are similar, and the form of the quotient is the same as in the case of a finite divisor. See p. 322. col. 2. par. ult. &c.

Note 5. If the terms be similar, or extended till they become so, the quotient is the same as if they were finite, and the operation may be conducted accordingly; for the quotient of vulgar fractions that have the same denominator is equal to the quotient of their numerators.

CHAP. XI. OF THE EXTRACTION OF ROOTS.

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THE origin of powers by involution has already been explained under the article ALGEBRA. There now remains therefore only to give the most expeditious methods of extracting the square and cube roots; the reasons of which will readily appear from what is said under that article. As for all powers above the cube, unless such as are multiples of either the square and cube, the extraction of their roots admits of no deviation from the algebraic canon which must be always constructed on purpose for them.

If the root of any power not exceeding the seventh power, be a single digit, it may be obtained by inspection, from the following TABLE of powers.

S f 2

1st

In these accounts the quotient is never finite. It may repeat if the dividend repeat; or, if the dividend circulate, it may circulate an equal number of places, often more, and never fewer. The greatest possible extent of the circle is found by multiplying the divisor into the number of places in the circle of the dividend. Thus, a circulate of 3 places, divided by 3, quotes a circulate of 3 times 3, or 9 places.

CASE II. “ When the divisor is interminate, the multiplications and subtractions must be performed, according to the directions given for repeating and circulating decimals.”

Ex. 1st.] Divide .37845 by g .

g).37845(.68121

333333

45116

44444

672

558

116

111

8

8

0

2d.] Divide .245892 by 2,18,

.2,18,).245892(1.127005

218181,81,

27710,18,

21818,18,

5892,00,

4363,63,

1528,36,

1527,27,

1090,90

1090,90

0

1st power or root.	2d power or square.	3d power or cube.	4th power or biquadrate.	5th power or surfolid.	6th power or cube squa- red.	7th power.
1	1	1	1	1	1	1
2	4	8	16	32	64	128
3	9	27	81	243	729	2187
4	16	64	256	1024	4096	16384
5	25	125	625	3125	15625	78125
6	36	216	1296	7776	46656	279936
7	49	343	2401	16807	117649	823543
8	64	512	4096	32768	262144	2097152
9	81	729	6561	59049	531441	4782969

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Sect. i. EXTRACTION of the SQUARE ROOT.

RULE I. "Divide the given number into periods of two figures, beginning at the right hand in integers, and pointing toward the left. But in decimals, begin at the place of hundreds, and point toward the right. Every period will give one figure in the root."

II. "Find by the table of powers, or by trial, the nearest lesser root of the left hand period, place the figure so found in the quot, subtract its square from the said period, and to the remainder bring down the next period, for a dividial or resolvend."

III. "Double the quot for the first part of the divisor; inquire how often this first part is contained in the whole resolvend, excluding the units place; and place the figure denoting the answer both in the quot and on the right of the first part; and you have the divisor complete."

IV. "Multiply the divisor thus completed by the figure put in the quot, subtract the product from the resolvend, and to the remainder bring down the following period for a new resolvend, and then proceed as before."

Note 1st. If the first part of the divisor, with unity supposed to be annexed to it, happen to be greater than the resolvend, in this case place 0 in the quot, and also on the right of the partial divisor; to the resolvend bring down another period; and proceed to divide as before.

Note 2d. If the product of the quotient-figure into the divisor happen to be greater than the resolvend, you must go back, and give a lesser figure to the quot.

Note 3. If after every period of the given number is brought down, there happen at last to be a remainder, you may continue the operation, by annexing periods or pairs of cyphers, till there be no remainder, or till the decimal part of the quot repeat or circulate, or till you think proper to limit it.

Ex. 1st. Required the square root of 133225.

$$\begin{array}{r}
 \text{Square number } 133225 \text{ (365 root)} \\
 \underline{9} \\
 1 \text{ div. } 66) 432 \text{ resolvend.} \\
 396 \text{ product} \\
 \hline
 1095
 \end{array}$$

2 div. 725) 3625 resolvend.

3625 product.

2d.] Required the square root of 72, to eight decimal places.

72.00000000 (8.48528137 root.

64

164 (800

656

1688) 14400

13504

16965 (89600

84825

169702) 477500

339404

169704) 138096

.... 135763

2333

1697

636

509

127

118

(9)

3d.] Required the square root of .2916.

.2916 (.54 root.

25

104) 416

416

If the square root of a vulgar fraction be required, find the root of the given numerator for a new numerator, and find the root of the given denominator for a new denominator. Thus the square root of $\frac{4}{9}$ is $\frac{2}{3}$, and the root of $\frac{16}{25}$ is $\frac{4}{5}$; and thus the root of $\frac{25}{16}$ ($= 6\frac{1}{4}$) is $\frac{5}{4} = 2\frac{1}{4}$.

But if the root of either the numerator or denominator cannot be extracted without a remainder, reduce the vulgar fraction to a decimal, and then extract the root, as in Ex. 3d. above.

Sect. ii. EXTRACTION of the CUBE ROOT.

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RULE I. "Divide the given number into periods of three figures, beginning at the right hand in integers, and pointing toward the left. But in decimals, begin at the place of thousands, and point toward the right. The number of periods shows the number of figures in the root."

II. "Find by the table of powers, or by trial, the nearest lesser root of the left hand period; place the figure so found in the quot; subtract its cube from the said period; and to the remainder bring down the next period for a dividial or resolvend."

The divisor consists of three parts, which may be found as follows.

III.

Extraction
of Roots.

III. "The first part of the divisor is found thus:
"Multiply the square of the quot by 3, and to the pro-
"duct annex two cyphers; then enquire how often this
"first part of the divisor is contained in the resolvend,
"and place the figure denoting the answer in the quot."
IV. "Multiply the former quot by 3, and the pro-
"duct by the figure now put in the quot; to this last
"product annex a cypher; and you have the second
"part of the divisor. Again, square the figure now
"put in the quot for the third part of the divisor;
"place these three parts under one another, as in ad-
"dition; and their sum will be the divisor complete."
V. "Multiply the divisor, thus completed, by the
"figure last put in the quot, subtract the product from
"the resolvend, and to the remainder bring down the
"following period for a new resolvend, and then pro-
"ceed as before."

Note 1. If the first part of the divisor happen to be equal to or greater than the resolvend, in this case, place 0 in the quot, annex two cyphers to the said first part of the divisor, to the resolvend bring down another period, and proceed to divide as before.

Note 2. If the product of the quotient figure into the divisor happen to be greater than the resolvend, you must go back, and give a lesser figure to the quot.

Note 3. If, after every period of the given number is brought down, there happen at last to be a remainder, you may continue the operation by annexing periods of three cyphers till there be no remainder, or till you have as many decimal places in the root as you judge necessary.

Ex. 1st. Required the cube root of 12812904.

Cube number 12812904 (234 root.)

$$\begin{array}{r} 1\text{st part } 1200 \})4812 \text{ resolvend.} \\ 2\text{d part } 180 \} \\ 3\text{d part } 9 \} \\ \hline 1 \text{ divisor } 1389 \times 3 = 4167 \text{ product.} \\ \hline 1\text{st part } 158700 \})645904 \text{ resolvend.} \\ 2\text{d part } 2760 \} \\ 3\text{d part } 16 \} \\ \hline 2 \text{ divisor } 161476 \times 4 = 645904 \text{ product.} \end{array}$$

PROOF.

Square 54756

$$\begin{array}{r} 234 \\ 234 \\ \hline 936 \\ 702 \\ 468 \\ \hline \end{array}$$

Square 54756 Cube 12812904

2d.] Required the cube root of $28\frac{7}{8}$.

28.750000 (3.06 root.)

27

$270000 \})1750000 \text{ resolv.}$
 $5400 \}$
 $36 \}$

Div. $275436 \times 6 = 1652616$ prod.

97384 rem.

PROOF.

Sq. 9.3636

$$\begin{array}{r} 3.06 \\ 3.06 \\ \hline 1836 \\ 918 \\ \hline \end{array}$$

Sq. 9.3636 28.652616
 97384 rem.
 28.750000 cube.

If the cube root of a vulgar fraction be required, find the cube root of the given numerator for a new numerator, and the cube root of the given denominator for a new denominator. Thus, the cube root of $\frac{8}{27}$ is $\frac{2}{3}$, and the cube root of $\frac{27}{64}$ is $\frac{3}{4}$; and thus the cube root of $\frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$ is $\frac{1}{2}$.

But if the root of either the numerator or denominator cannot be extracted without a remainder, reduce the vulgar fraction to a decimal, and then extract the root.

A R I

ARIUS, a divine of the fourth century, the head and founder of the ARIANS, a sect which denied the eternal divinity and substantiality of the Word. He was born in Lybia, near Egypt. Eusebius, bishop of Nicomedia, a great favourite of Constantia, sister of the emperor Constantine, and wife of Licinius, became a zealous promoter of Arianism. He took Arius under his protection, and introduced him to Constantia; so that the sect increased, and several bishops embraced it openly. There arose, however, such disputes in the cities, that the emperor, in order to remedy these disorders, was obliged to assemble the council of Nice, where, in the year 325, the doctrine of Arius was condemned. Arius was banished by the emperor, all his books were ordered to be burnt, and capital punishment was denounced against whoever dared to keep them. After five years banishment, he was recalled to

A R I

Constantinople, where he presented the emperor with a confession of his faith, drawn up so artfully, that it fully satisfied him. Notwithstanding which, Athanasius, now advanced to the see of Alexandria, refused to admit him and his followers to communion. This so enraged them, that, by their interest at court, they procured that prelate to be deposed and banished. But the church of Alexandria still refusing to admit Arius into their communion, the emperor sent for him to Constantinople; where, upon delivering in a fresh confession of his faith in terms less offensive, the emperor commanded Alexander, the bishop of that church, to receive him the next day into his communion: but that very evening Arius died. The manner of his death was very extraordinary: as his friends were conducting him in triumph to the great church of Constantinople, Arius, pressed by a natural necessity, stepped aside to ease himself.

Ark. himself; but expired on the spot, his bowels gushing out.

But the heresy did not die with the heresiarch: his party continued still in great credit at court. Athanasius, indeed, was soon recalled from banishment, and as soon removed again; the Arians being countenanced by the government, and making and deposing bishops as it best served their purposes. In short, this sect continued with great lustre above 300 years: it was the reigning religion of Spain for above two centuries: it was on the throne both in the east and west: it prevailed in Italy, France, Pannonia, and Africa; and was not extirpated till about the end of the 8th century.

This heresy was again set on foot in the west by Servetus, who, in 1531, wrote a little treatise against the mystery of the Trinity. After his death Arianism got footing in Geneva; from whence it removed into Poland; but, at length, degenerated, in a great measure, into Socinianism. Erasmus seems to have aimed at reviving Arianism, in his commentaries on the New Testament; and the learned Grotius seems to lean a little that way.

With regard to the state of Arianism in England, it may be sufficient to observe, that from the numerous publications of that cast which are daily making their appearance, it seems to be rather a growing, than exploded, doctrine there.

Plate LIII.
Fig. 1.

ARK, or *Noah's ARK*, a floating vessel built by Noah, for the preservation of his family, and the several species of animals during the deluge.

The ark has afforded several points of curious inquiry among the critics and naturalists, relating to its form, capacity, materials, &c.

The wood whereof the ark was built is called in the Hebrew *Gopher-wood*, and in the Septuagint *square timbers*. Some translate the original *cedar*, others *pine*, others *box*, &c. Pelletier prefers cedar on account of its incorruptibility, and the great plenty of it in Asia; whence Herodotus and Theophrastus relate, that the Kings of Egypt and Syria built whole fleets thereof, instead of deal.

The learned Mr Fuller, in his *Miscellanies*, has observed, that the wood whereof the ark was built was nothing but that which the Greeks call *κυπαρισσος*, or the *cypress-tree*; for, taking away the termination, *kypar* and *gopher* differ very little in sound. This observation the great Bochart has confirmed, and shown very plainly that no country abounds so much with this wood as that part of Assyria which lies about Babylon.

In what place Noah built and finished his ark is no less made a matter of disputation. But the most probable opinion is, that it was built in Chaldea, in the territories of Babylon, where there was so great a quantity of cypress in the groves and gardens in Alexander's time, that that prince built a whole fleet out of it for want of timber. And this conjecture is confirmed by the Chaldean tradition, which makes Xithurus (another name for Noah) set sail from that country.

The dimensions of the ark, as given by Moses, are 300 cubits in length, 50 in breadth, and 30 in height; which some have thought too scanty, considering the number of things it was to contain; and hence an argument has been drawn against the authority of the relation. To solve this difficulty many of the ancient

fathers and the modern critics have been put to very miserable shifts: But Buteo and Kircher have proved geometrically, that taking the common cubit of a foot and a half, the ark was abundantly sufficient for all the animals supposed to be lodged in it. Snellius computes the ark to have been above half an acre in area. Father Lamy shows, that it was 110 feet longer than the church of St Mary at Paris, and 64 feet narrower: and if so, it must have been longer than St Paul's church in London, from west to east, and broader than that church is high in the inside, and 54 feet of our measure in height: and Dr Arbuthnot computes it to have been 81062 tons.

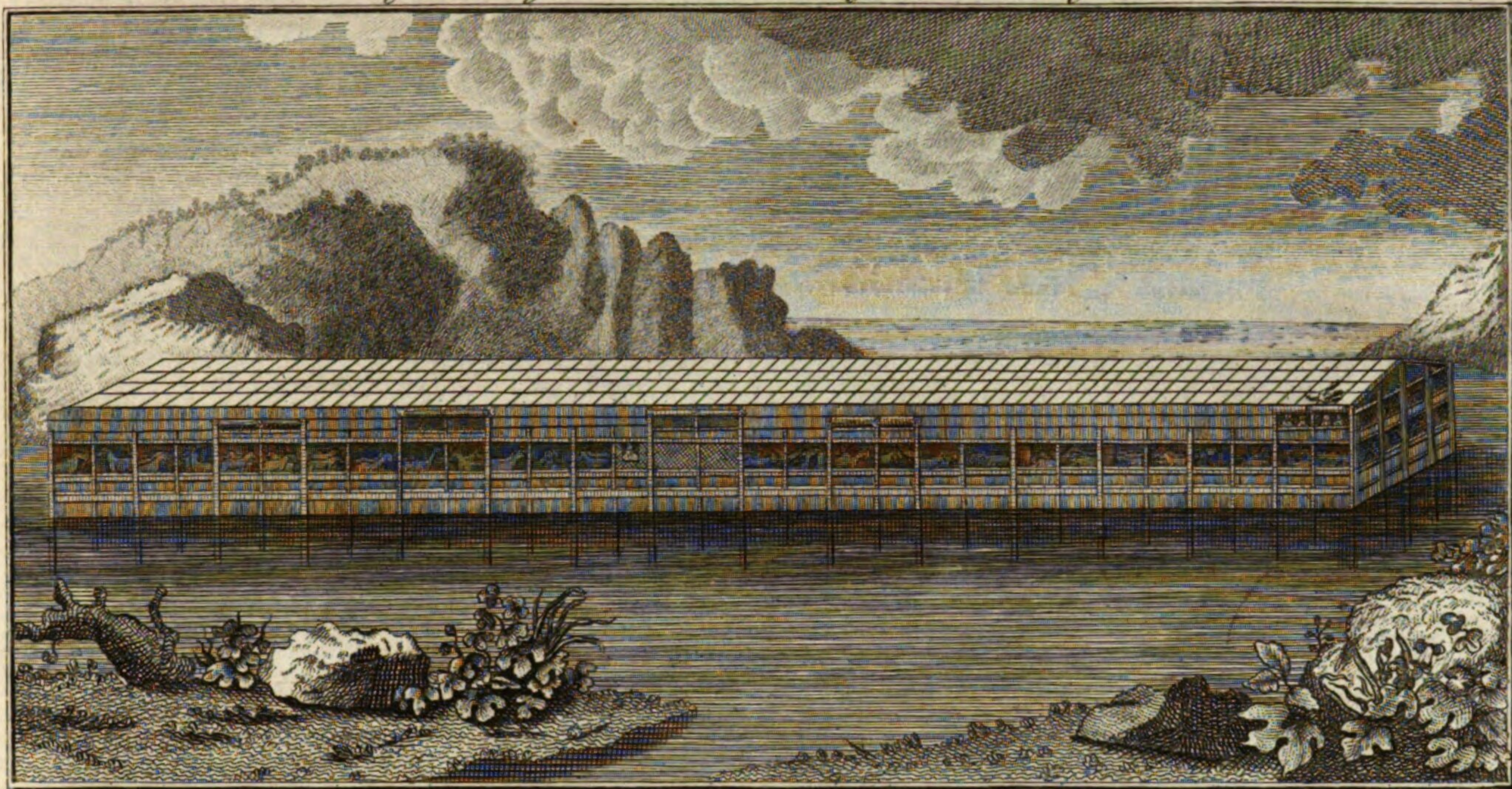
The things contained in it were, besides eight persons of Noah's family, one pair of every species of unclean animals, and seven pair of every species of clean animals, with provisions for them all during the whole year. The former appears, at first view, almost infinite; but if we come to a calculation, the number of species of animals will be found much less than is generally imagined; out of which, in this case, are excepted such animals as can live in the water; and bishop Wilkins shows that only 72 of the quadruped kind needed a place in the ark.

By the description Moses gives of the ark, it appears to have been divided into three stories, each ten cubits or 15 feet high; and it is agreed on, as most probable, that the lowest story was for the beasts, the middle for the food, and the upper for the birds, with Noah and his family; each story being subdivided into different apartments, stalls, &c. though Josephus, Philo, and other commentators, add a kind of fourth story under all the rest; being, as it were, the hold of the vessel, to contain the ballast and receive the filth and feces of so many animals; but F. Calmet thinks, that what is here reckoned a story, was no more than what is called the *keel* of ships, and served only for a conservatory of fresh water. Drexelius makes 300 apartments; F. Fournier, 333; the anonymous author of the questions on Genesis, 400; Buteo, Temporarius, Arias Montanus, Hostus, Wilkins, Lamy, and others, suppose as many partitions as there were different sorts of animals. Pelletier makes only 72. viz. 36 for the birds, and as many for the beasts. His reason is, that if we suppose a greater number, as 333 or 400, each of the eight persons in the ark must have had 37, 41, or 50 stalls to attend and cleanse daily, which he thinks impossible to have been done. But it is observed, that there is not much in this: to diminish the number of stalls without a diminution of animals is vain; it being perhaps more difficult to take care of 300 animals in 72 stalls than in 300. As to the number of animals contained in the ark, Buteo computes that it could not be equal to 500 horses; he even reduces the whole to the dimensions of 56 pair of oxen. F. Lamy enlarges it to 64 pair of oxen, or 128 oxen; so that, supposing one ox equal to two horses, if the ark had room for 256 horses, there must have been room for all the animals. But the same author demonstrates, that one floor of it would suffice for 500 horses, allowing nine square feet to a horse.

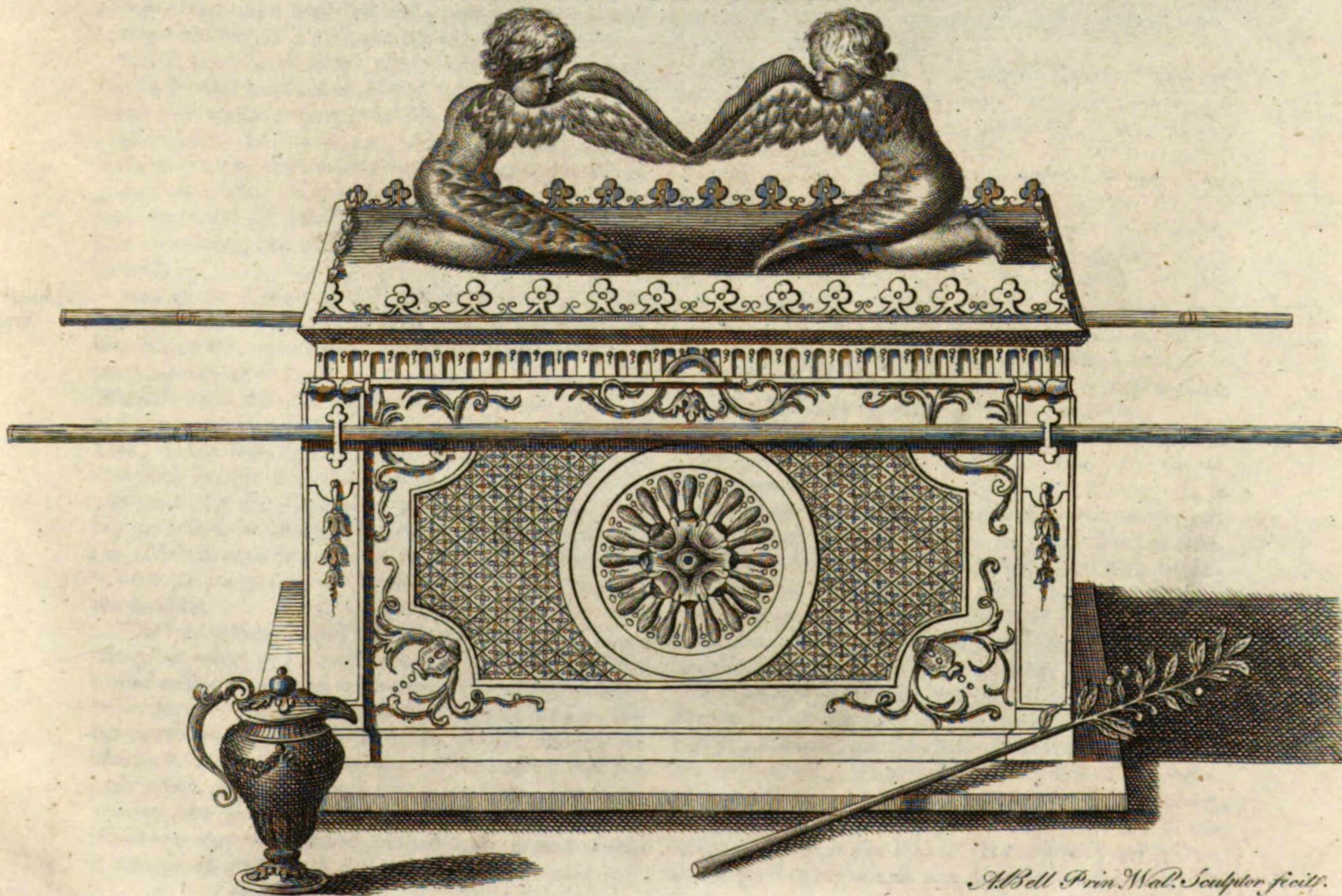
As to the food in the second story, it is observed by Buteo from Columella, that 30 or 40 pounds of hay ordinarily suffices for an ox a-day; and that a solid cubit of hay, as usually pressed down in our hay-ricks, weighs

Ark.

floating on the waters of the Deluge.



ARK of the COVENANT.



A. Bell Pin. Wal. Sculptor fecit.

Ark.

weighs about 40 pounds; so that a square cubit of hay is more than enough for one ox in one day. Now, it appears, that the second story contained 150,000 solid cubits; which divided between 206 oxen, will afford each more hay, by two thirds, than he can eat in a year. Bishop Wilkins computes all the carnivorous animals equivalent, as to the bulk of their bodies, and their food, to 27 wolves, and all the rest to 280 bees. For the former, he allows 1825 sheep; and for the latter, 109,500 cubits of hay: all which will be easily contained in the two first stories, and a deal of room to spare. As to the third story, nobody doubts of its being sufficient for the fowls; with Noah, his sons, and daughters. Upon the whole, the learned bishop remarks, that of the two, it appears much more difficult to assign a number and bulk of necessary things to answer the capacity of the ark, than to find sufficient room for the several species of animals already known to have been there. This he attributes to the imperfection of our list of animals, especially those of the unknown parts of the earth; adding, that the most expert mathematician at this day could not assign the proportion of a vessel better accommodated to the purpose than is here done: and hence he finally concludes, that the capacity of the ark, which had been made an objection against scripture, ought to be esteemed a confirmation of its divine authority; since, in those ruder ages, men, being less versed in arts and philosophy, were more obnoxious to vulgar prejudices than now; so that, had it been an human invention, it would have been contrived according to those wild apprehensions which arise from a confused and general view of things as much too big as it had been represented too little.

But it must be observed, that, besides the places requisite for the beasts and birds, and their provisions, there was room required for Noah to lock up household utensils, the instruments of husbandry, grains and seeds to sow the earth with after the deluge; for which purpose it is thought that he might spare room in the third story for 36 cabins, besides a kitchen, a hall, four chambers, and a space about 48 cubits in length to walk in.

Plate LIII.
fig. 2.

Ark of the Covenant, a small chest or coffer, three feet nine inches in length, two feet three inches in breadth, and two feet three inches in height, in which were contained the golden pot that had manna, and Aaron's rod, and the tables of the covenant. This coffer was made of shittim-wood, and covered with a lid, which was made of solid gold. The ark was repositied in the holiest place of the tabernacle. It was taken by the Philistines, and detained 20, some say 40 years, at Kirjath-jearim; but the people being afflicted with emerods on account of it, returned it with divers presents. It was afterwards placed in the temple.

The lid or covering of the ark was called the *propitiatory* or *mercy seat*; over which were two figures placed called *Cherubims*, with expanded wings of a peculiar form. Here the Schechinah rested both in the tabernacle and temple in a visible cloud: hence were issued the Divine oracles by an audible voice; and the high priest appeared before this mercy-seat once every year on the great day of expiation; and the Jews, wherever they worshipped, turned their faces towards the place where the ark stood.

In the second temple there was also an ark, made of the same shape and dimensions with the first, and put in the same place, but without any of its contents and peculiar honours. It was used as a representative of the former on the day of expiation, and a repository of the original copy of the holy Scriptures, collected by Ezra and the men of the great synagogue, after the captivity. And in imitation of this, the Jews to this day have a kind of ark in their synagogues, wherein their sacred books are repositied. This they call *aron*. Leo of Modena gives a description thereof in his *Account of the Customs and Ceremonies of those of his Nation*. "The Jews (says he), in the eastern side of their synagogues, have an ark, or armory, called *aron*, in memory of the ark of the covenant. In this are preserved the five books of Moses, written on vellum, with ink made on purpose," &c. Some have supposed that the figure of this ark is still remaining on the triumphal arch of Titus at Rome; though Villalpandus and others, with greater reason, are of opinion, that it is the table of shew-bread. *Prideaux's Con.* Vol. i. p. 209. Tertullian calls this ark *Armarium Judaicum*; whence the phrase, *to be in the armory of the synogogue*, q. d. in the number of canonical writings.

A chest or coffer, very nearly resembling the Jewish ark, and called the *house of the God*, was found in Huaheine, one of the islands in the southern sea. Mr Banks could obtain no other information concerning it than what the name imports. *Hawkefworth's Account*, &c. Vol. ii. p. 252.

ARKLOW, a sea-port town of Ireland, in the county of Wicklow, and province of Leinster. W. Long. 6. 15. N. Lat. 52. 55.

ARLES, a city of Provence in France, seated on the east side of the Rhone, on a hill, whose declivity is towards the north. It is an archbishop's see; and is celebrated for its antiquities both within and without the city. Those of which any remains are now to be seen are the amphitheatre, the obelisk, the Elysian Fields, the sepulchres, columns with their capitals, busts, pedestals, aqueducts, with some remains of the capitol, and the temples of their gods. The other ancient monuments are entirely destroyed. Under the amphitheatre, in 1651, they found the statue of Venus, which was worshipped by this city; and has been since carried to the castle of Versailles. It is a masterpiece which will always be admired by connoisseurs.

The amphitheatre is one of the most remarkable pieces of antiquity. It was built by the Romans, but the time is unknown, though some say by Julius Cæsar. It is of an oval form, and about 400 yards in circumference, and the front is 34 yards in height. The middle, called the *Arena*, is 142 yards wide and 104 broad. The porticos or piazzas are three stories, built with stone of a prodigious size. Each of them consists of 60 arches, which still remain; and the walls are of a surprising thickness, but gone to decay.

The obelisk is the only one of this kind to be seen in France. It seems to be one of the forty brought from Egypt to Rome, because it is of the same oriental granite with them. They are generally full of hieroglyphic characters; but this is quite smooth. In 1675, it was found in a private garden near the walls of the city, not far from the Rhone. It consists of one piece; and is 52 feet high, and 7 in diameter at the base. It

Ark
||
Arles

Arlenx, is now supported with four lions made of bronze; and on the top a blue ball is placed, with the arms of France, and over that a sun.

Armacales.

The Pagans burying-place called the *Elysian Fields*, is without the city, upon an agreeable hill, divided into two parts. The first, called *Moulaires*, has very few tombs, they having been broken to build the walls of gardens, which are made in that place. The second, called *Eliscamp*, contains a great number. Those of the Pagans have the letters D. M. which signifies *Diis Manibus*. Those of the Christians have a cross. Pieces of coin of gold, silver, and bronze, are found here; as also urns, lamps, and cups, without number.

Here is a royal academy of sciences, consisting of thirty members, who must be natives, gentlemen, and inhabitants of the city. It enjoys the same privileges as that at Paris. Arles is surrounded with marshy land, which renders the air full of vapours, and makes it not very wholesome. E. Long. 4. 48. N. Lat. 43. 4.

ARLEUX, an ancient town of the Netherlands, in Cambresis, with a castle. It was taken by the French in 1645, and retaken by the allies in 1711: but the French got possession again the same month. E. Long. 3. 16. N. Lat. 59. 17.

ARLON, an ancient town of the Netherlands, formerly a strong place, but now dismantled. It belongs to the house of Austria. E. Long. 15. 50. Lat. 49. 4.

ARM, a part of the human body, terminating at one end in the shoulder, and at the other in the hand. See **ANATOMY**, No. 48.

ARM, among sportsmen, is applied to a horse, when, by pressing down his head, he endeavours to defend himself against the bit, to prevent his being checked by it. The remedy is, to have a wooden ball covered with velvet, or other matter, put on his chaul, which will so press him between the jaw bones as to prevent his bringing his head so near his breast.

ARM, in geography, is used for the branch of a sea or river. Italy and Sicily are only parted by an arm of the sea. St George's arm in the Mediterranean is the Thracian Bosphorus.

ARM is also used figuratively for power. The secular arm is the lay or temporal authority of a secular judge; to which recourse is had for the execution of the sentences passed by ecclesiastical judges.

The church sheds no blood: even the judges of inquisition, after they have found the person guilty, surrender him to the secular arm. The council of Antioch, held in 341, decrees, that recourse be had to the secular arm to repress those who refuse obedience to the church: for secular arm, they here use exterior power.

ARM, in respect of the magnet. A loadstone is said to be armed, when it is capped, cased, or set in iron or steel, in order to make it take up the greater weight, and also to distinguish readily its poles. See **MAGNETISM**.

ARMACALES, a river of Babylon (Abydenus); called *Fossa Regia*, the *Royal Trench* or *Cut* (Polybius); the *Royal River* (Ptolemy); *Almarchur* (Pliny); *Naarmalcha* (Ammian); a factitious channel or cut, made by Nabuchodonosor, and a horn or branch of the Euphrates, (Abydenus). The Euphrates naturally divides into two channels, one passing through Babylon, the other through Selucia, and then falls into the Ti-

gris; the factitious channel between these two is the **Armada**. Royal River; which mixes with the Tigris, a great deal lower down than Selucia at Apamea, (Ptolemy).

ARMADA, a Spanish term, signifying a fleet of men of war. The armada which attempted to invade England in the time of Queen Elizabeth, is famous in history.

This armada, to which the Spaniards, in confidence of success, gave the name of *Invincible*, consisting of 150 ships, most of which were greatly superior in strength and size to any that had been seen before. It had on board near 20,000 soldiers and 8000 sailors, besides 2000 volunteers of the most distinguished families in Spain. It carried 2650 great guns, was victualled for half a year, and contained such a quantity of military stores, as only the Spanish monarch, enriched by the treasures of the Indies and America, could supply. The troops on board were to be joined by 34,000 more which the Duke of Parma had assembled in the neighbourhood of Nieuport and Dunkirk. For transporting these, he had, with incredible labour, provided a great number of flat-bottomed vessels, and had brought sailors to navigate them from the towns in the Baltic. Most of these vessels had been built at Antwerp; and as he durst not venture to bring them from thence by sea to Nieuport, lest they should have been intercepted by the Dutch, he was obliged to send them along the Scheld to Ghent, from Ghent to Bruges by the canal which joins these towns, and from Bruges to Nieuport by a new canal which he dug on the present occasion. This laborious undertaking, in which several thousand workmen had been employed, was already finished, and the Duke now waited for the arrival of the Spanish fleet; hoping, that as soon as it should approach, the Dutch and English ships which cruised upon the coast would retire into their harbours.

When the news reached England that this mighty fleet was preparing to sail, terror and consternation universally seized the inhabitants. A fleet of not above 30 ships of war, and those very small in comparison, was all that was to oppose it by sea. All the commercial towns of England, however, were required to furnish ships for reinforcing this small navy. The citizens of London, instead of fifteen vessels, which they were commanded to equip, voluntarily fitted out double the number; and the gentry and nobility equipped 43 ships at their own charge. Lord Howard of Effingham was admiral; and under him served Drake, Hawkins, and Frobisher, all of them renowned as seamen of courage and capacity. The principal fleet was stationed at Plymouth. A smaller squadron, consisting of 40 vessels, English and Flemish, was commanded by Lord Seymour second son of protector Somerset, and lay off Dunkirk in order to intercept the Duke of Parma.

The land-forces of England were more numerous than those of the enemy, but inferior in discipline and experience. An army of 20,000 men was disposed in different bodies along the south coast, with orders to retire backwards and waste the country, if they could not prevent the Spaniards from landing; 22,000 foot and 1000 horse, under the command of the Earl of Leicester, were stationed at Tilbury, in order to defend the capital; and the principal army, consisting of 34,000 foot and 2000 horse, commanded by Lord

Hunsdon,

Armada.

Hunsdon, was reserved for guarding the Queen's person, and appointed to march whithersoever the enemy should appear. These armies, though all the Spanish forces had been able to land, would possibly have been sufficient to protect the liberties of their country. But as the fate of England, in that event, must depend on the issue of a single battle, all men of serious reflection entertained the most awful apprehensions of the shock of at least 50,000 veterans, commanded by experienced officers, under so consummate a general as the duke of Parma. The Queen alone was undaunted. She issued all her orders with tranquillity, animated her people to a steady resistance, and employed every resource which either her domestic situation or her foreign alliances could afford her. She even appeared on horseback in the camp at Tilbury; and riding through the lines, discovered a cheerful and animated countenance, exhorted the soldiers to remember their duty to their country and their religion, and professed her intention, tho' a woman, to lead them herself into the field against the enemy, and rather perish in battle than survive the ruin and slavery of her people. "I know (said she, intrepidly) I have but the weak and feeble arm of a woman; but I have the heart of a king, and of a king of England too!" The heroic spirit of Elizabeth communicated itself to the army, and every man resolved to die rather than desert his station.

The Spanish armada was ready in the beginning of May; but its sailing was retarded by the death of the Marquis of Santa Croce the admiral, and that also of the vice-admiral the duke of Paliano. The command of the expedition was therefore given to the Duke of Medina Sidonia, a man entirely unexperienced in sea affairs. This promotion, in some measure, served to frustrate the design, which was also rendered less successful by some other accidents. Upon leaving the port of Lisbon, the armada next day met with a violent tempest, which sunk some of the smallest of their shipping, and obliged the fleet to put back into the harbour. After some time spent in refitting, they put again to sea. Being descried by Fleming, a Scottish pirate, who was roving in those seas, he immediately sailed towards the English fleet, and informed the admiral of their approach. Effingham had just time to get out of port when he saw the Spanish armada coming full sail towards him, disposed in the form of a crescent, and stretching the distance of seven miles from the extremity of one division to that of the other. The English admiral, considering that the Spaniards would probably be much superior to him in close fight, by reason of the size of their ships and the number of their troops, wisely resolved to content himself with harassing them in their voyage, and with watching attentively all the advantages which might be derived from storms, cross-winds, and such like fortuitous accidents. It was not long before he discerned a favourable opportunity of attacking the vice-admiral Recado. This he did in person; and on that occasion displayed so much dexterity in working his ship, and in loading and firing his guns, as greatly alarmed the Spaniards for the fate of the vice-admiral. From that time they kept much closer to one another; notwithstanding which, the English on the same day attacked one of the largest galleasses. Other Spanish ships came

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up in time to her relief; but in their hurry one of the principal galleons, which had a great part of the treasure on board, ran foul of another ship, and had one of her masts broken. In consequence of this misfortune she fell behind, and was taken by Sir Francis Drake; who on the same day took another capital ship, which had been accidentally set on fire.

Several other rencounters happened, and in all of them the English proved victorious, through the great advantage which they derived from the lightness of their ships, and the dexterity of the sailors. The Spaniards in that age did not sufficiently understand nautical mechanics, to be able to avail themselves of the unusual magnitude of their ships. The English sailed round them, approached or retired, with a velocity that filled them with amazement, and did infinitely greater execution with their cannon: for while every shot of theirs proved effectual, their ships suffered very little damage from the enemy, whose guns were planted too high, and generally spent their force in air.

The Spaniards, however, still continued to advance till they came opposite to Calais; there the Duke de Medina having ordered them to cast anchor, he sent information to the duke of Parma of his arrival, and intreated him to hasten the embarkation of his forces. Farnese accordingly began to put his troops on board. But at the same time he informed Medina, that, agreeable to the King's instructions, the vessels which he had prepared were proper only for transporting the troops, but were utterly unfit for fighting; and for this reason, till the armada were brought still nearer, and the coast cleared of the Dutch ships which had blocked up the harbours of Nieuport and Dunkirk, he could not stir from his present station, without exposing his army to certain ruin, the consequence of which would probably be the entire loss of the Netherlands.

In compliance with this request, the armada was ordered to advance; and it had arrived within sight of Dunkirk, between the English fleet on the one hand, and the Dutch on the other, when a sudden calm put a stop to all its motions. In this situation the three fleets remained for one whole day. About the middle of the night a breeze sprung up; and Lord Howard had recourse to an expedient which had been happily devised on the day before. Having filled eight ships with pitch, sulphur, and other combustible materials, he set fire to them, and sent them before the wind against the different divisions of the Spanish fleet.

When the Spaniards beheld these ships in flames approaching towards them, it brought to their remembrance the havoc which had been made by the fire-ships employed against the duke of Parma's bridge at the siege of Antwerp. The darkness of the night increased the terror with which their imaginations were overwhelmed, and the panic flew from one end of the fleet to the other. Each crew, anxious only for their own preservation, thought of nothing but how to escape from the present danger. Some of them took time to weigh their anchors, but others cut their cables, and suffered their ships to drive with blind precipitation, without considering whether they did not thereby expose themselves to a greater danger than that which they were so solicitous to avoid. In this confusion the

T t

ships

Armada.

Armada,
Armadilla.

ships ran foul of one another: the shock was dreadful, and several of them received so much damage as to be rendered unfit for future use.

When day-light returned, Lord Howard had the satisfaction to perceive that his stratagem had fully produced the desired effect. The enemy were still in extreme disorder, and their ships widely separated and dispersed. His fleet had lately received a great augmentation by the ships fitted out by the nobility and gentry, and by those under Lord Seymour, who had left Justin de Nassau as alone sufficient to guard the coast of Flanders. Being bravely seconded by Sir Francis Drake and all the other officers, he made haste to improve the advantage which was now presented to him, and attacked the enemy in different quarters at the same time with the utmost impetuosity and ardour. The engagement began at four in the morning and lasted till six at night. The Spaniards displayed in every rencounter the most intrepid bravery; but from the causes already mentioned, they did very little execution against the English, while many of their own ships were greatly damaged, and twelve of the largest were either run aground, or sunk, or compelled to surrender.

It was now evident that the purpose of the armada was utterly frustrated. The Spanish admiral, after many unsuccessful rencounters, prepared therefore to make his way home; but as the winds were contrary to his return through the Channel, he resolved to take the circuit of the island. The English fleet followed him for some time; and had not their ammunition fallen short, through the negligence of the public offices in supplying them, they had obliged the armada to surrender at discretion. Such a conclusion of that vain-glorious enterprize would have been truly illustrious to the English, but the event was scarce less fatal to the Spaniards. The armada was attacked by a violent storm in passing the Orkneys; and the ships, having already lost their anchors, were obliged to keep at sea, while the mariners, unaccustomed to hardships, and unable to manage such unwieldy vessels, allowed them to drive on the western isles of Scotland, or on the coast of Ireland, where they were miserably wrecked. Not one half of the fleet returned to Spain, and a still smaller proportion of the soldiers and seamen; yet Philip, whose command of temper was equal to his ambition, received with an air of tranquillity the news of so humbling a disaster. "I sent my fleet (said he) to combat the English, not the elements. God be praised that the calamity is not greater!" This calamity, however, was sensibly felt all over Spain, and there was scarcely a single family of rank in the kingdom that did not go into mourning for the death of some near relation; insomuch that Philip, dreading the effect which this universal face of sorrow might produce upon the minds of the people, imitated the conduct of the Roman senate after the battle of Cannæ, and published an edict to abridge the time of public mourning.

ARMADILLA, in the Spanish America, denotes a squadron of men of war, to the number of six or eight, from twenty-four to fifty pieces of cannon, which the king maintains, to prevent foreigners from trading with the Spaniards and the Indians, both in time of war and peace.

The vessels of this armadilla are those that have been so much talked of, under the name of *guarda costas*. They have even power to take all Spanish merchant-ships they meet with on the coasts that have not licences from the king.

The South sea has its armadilla as well as the North sea. The ordinary abode of the former are at Calao, a port of Lima; that of the latter at Carthagená.

ARMADILLO, in zoology, a synonyme of the *dasyurus*. See **DASYRUS**.

ARMAGEDDON, a place spoken of in the Revelations (xvi. 16.) which literally signifies the mountain of Mageddon or Megiddo, a city situated in the great plain at the foot of mount Carmel, where king Josiah received his mortal wound in the battle against Necho king of Egypt. At Armageddon, the three unclean spirits, coming out of the dragon's mouth, shall gather together the kings of the earth to the battle of the great day of God Almighty (Rev. xvi. 13, 14.) The word armageddon, according to Mr Pool, does not signify any particular place, but is here an allusion, as some think, to that of Megiddo, mentioned Judges v. 19. where Barak overcame Sisera with his great army, and where Josiah was slain (2 Kings xxiii. 30). Others translate this word, *the mountain of the gospel*, and others, *the mountain of apples or fruits*.

ARMAGH, a county of Ireland, bounded by Louth on the South; Lough-neagh, on the north; Tyrone and Monaghan, on the west; and Down, in part, on the east, from which it is separated by the river Newry. It is in length 32 miles, in breadth 17; and is divided into five baronies, containing about 170,620 acres. Both the air and soil are good, especially the latter, which is said to be the richest in Ireland; only there is a certain tract in it called the *Fewes*, that is, *hilly and barren*. The members it sends to parliament are six, *viz.* two for the city of Armagh, two for the county, and two for the borough of Charlemont.

Armagh, standing near the river Kalin, gives name to the country, and is the see of the primate of all Ireland. It is said to have been founded by St Patrick in the fifth century; and in 1142, it was constituted an archbishoprick, together with Dublin, Cashel, and Tuam, by cardinal Papyreo, with the consent of the king, dukes, bishops, abbots, and states of Ireland. This Papyreo was sent into Ireland by Pope Eugenius, to reform the abuses that had crept into the church-discipline of that country. Here was anciently a famous monastery built by St Columbo, or Columbanus, about the year 610. The cathedral was often burnt; but as often rebuilt and enlarged, and particularly by Patrick Scanlain, about 1262. His successor Nicholas, son of Molissa, beside books, rich ecclesiastical vestments, and other things, bestowed on it an annual pension of twenty marks. He appropriated also to his see the manor of Dromyskin. He died the 10th of May, 1303. This town was first subjected to the English by John de Courcy; but afterwards entirely destroyed by Tir Oen, or O'Neal, in Queen Elizabeth's time. However, it was afterwards recovered, rebuilt, and garrisoned by the English.

The see of Armagh is valued in the king's books, by an extent taken anno 30th Henry VIII. at L. 183, 17 : 5½ Irish money *per annum*, which amounts to

L. 137

Armadillo,
Armagh.

Armagnac L. 137 : 18 : 0 $\frac{1}{4}$ (the difference between Irish and Sterling money being at that time one fourth). But by an extent returned in the 15th of James I. it is valued at L. 400 Sterling *per annum*, and pays so much first fruits to this day. It is reputed to be worth annually L. 8000. The chapter of Armagh is composed of five dignitaries and four prebendaries, who have voices in every capitular act. The dignitaries are thus ranked, viz. a dean, chanter, chancellor, treasurer, and archdeacon. There are also eight vicars choral, and an organist, attendant on the service of the cathedral. The vicars choral were anciently fewer; and of the number only one priest. Primate Marsh added another priest, but without increasing the number of vicars. In the year 1720, Primate Lindsay obtained a new charter for enlarging the number of the said vicars to eight, and laid out upwards of L. 4000 on a purchase, in augmentation of the estate of the choir.

ARMAGNAC, a province of Guienne in France, 55 miles in length and 40 in breadth; bounded on the east by the river Garonne, on the south by Bigorre and Bearn, on the west by Gascony, and on the north by Condomois and Agenois: Auch is the capital town. It is fertile in corn and wine, and carries on a considerable trade in brandy, wool, and bonchretien pears, which are excellent.

ARMAMAXI, in antiquity, a kind of Scythian chariots or carriages, composed of two wheels, variously adorned with crowns, shields, breast-plates, and other spoils, carried in procession after the images of the gods and great men.

ARMAMENT, a large body of forces, raised and provided with the furniture of war, either for land or sea-service.

ARMATURA, in a general sense, is the same with what we otherwise call armour.

ARMATURA is more particularly used in the ancient military art, for a kind of exercise, performed with missile weapons, as darts, spears, arrows, and the like. In this sense, armatura stands contradistinguished from palaria; the latter being the exercise of the heavy-armed, the former of the light-armed.

The armatura was practised with great diligence among the Romans; they had their *campidoctores*, on purpose to instruct the *tyrones* or young soldiers in it. Under it were included the throwing of the spear or javelin, shooting with bows and arrows, &c.

ARMATURA is also an appellation given to the soldiers who were light-armed.

ARMATURA is also a denomination given to the soldiers in the emperor's retinue. Of these we find two schools, mentioned in the *Notitia imperii*, called the *armatura seniores* and *armatura juniores*. Their commander was intitled *tribunus armaturarum*.

ARMED, in the sea-language. A cross-bar shot is said to be armed, when some rope-yarn or the like is rolled about the end of the iron-bar, which runs through the shot.

ARMED, in heraldry, is used when the horns, feet, beak, or talons, of any beast or bird of prey, are of a different colour from the rest of their body.

ARMED-Ship, a vessel occasionally taken into the service of the government in time of war, and employed to guard some particular coast, or attend on a fleet. She is therefore armed and equipped in all re-

spects like a ship of war, and commanded by an officer of the navy, who has the rank of master and commander. All ships of this sort are upon the establishment of the king's sloop, having a lieutenant, master, purser, surgeon, &c.

ARMENE, or **ARMINA**, anciently a hamlet of Paphlagonia (Ptolemy). The inhabitants encompassed it with a wall, because of the coldness of the place, imagining by that means to render it warmer. But this proving ineffectual, gave rise to the proverb *Armenen muro cingere*, used to express some egregious folly.

ARMENIA, a country of Asia, anciently divided into Armenia Major and Minor. Armenia Major, according to Strabo, was bounded on the south by mount Taurus, which separated it from Mesopotamia; on the east, by the two Medias; on the north, by Iberia and Albania, or rather that part of mount Caucasus which surrounds them both; and on the west, by Armenia Minor, or the mountains Paryadres, some Pontic nations, and the Euphrates. The most considerable cities were Artaxata, Tigranocerta, and Thedosiopolis. — Armenia Minor was bounded on the east by the Euphrates; on the south by mount Taurus, which separated it from Cilicia; on the west and north, by a long chain of mountains called in different places *Mons Scordiscus*, *Amanus*, and *Antitaurus*, by which it was separated from Cappadocia.

Whence this tract received the name of *Armenia* is not determined. The Greeks suppose it to be so called from one *Armenus*, who attended Jason in the Argonautic expedition, and afterwards settled in this country. Others, transforming Armenia into Aramia, derive its name from Aram the son of Shem, or from one of the kings of Armenia bearing that name. Bochart imagines it to be a contraction or compound of *Aar*, a Hebrew word signifying a "mountain," and *Mini* signifying "metal," and which was the name of a province of Armenia mentioned by the prophet Jeremiah.

Herodotus derives the ancient Armenians from the Phrygians, by reason that several Phrygian words were crept into the ancient Armenian language. But Strabo reckons them to have been originally Syrians, which Bochart looks upon to be the most probable opinion.

Armenia is said to have been very early advanced to the honour of a kingdom. Berosus makes one Sytha the first founder of this monarchy, whose successor Bardanes, he says, was driven out by Ninus king of Assyria. Plutarch mentions one Araxes king of Armenia, who in a war with the Persians, being assured of success by an oracle, provided he sacrificed his two daughters, caused the two daughters of one Miesalcus, a nobleman of his court, to be sacrificed in their stead, flattering himself that he thereby complied with the oracle. But Miesalcus did not fail to revenge the death of his own daughters by putting the king's two daughters to death, and pursued himself so closely, that he was drowned in attempting to swim across the Araxes, which was then called *Helmus*.

The Armenians were in process of time subdued by the Medes, to whom Astyages made them tributaries, but allowed them to be governed by their own kings; but on the dissolution of the Median empire by Cyrus, the kingdom was reduced to the form of a province, and they were governed by Persian prefects or lieutenants. On the destruction of the Persian Empire by

Armenia. Alexander the Great, Armenia fell into the hands of the Macedonians; to whom it continued subject till the beginning of the reign of Antiochus the Great. This prince having appointed two prefects called *Zadriades* and *Artaxiis* to govern Armenia, they excited the people to a revolt, and caused themselves to be proclaimed kings of the provinces over which they presided. Antiochus being then very young, they were attended with success beyond their expectation; which encouraged them to attempt the enlargement of their territories. Accordingly, invading the neighbouring countries, they took from the Medes the provinces of *Caspiana*, *Phaunitis*, and *Basoropida*; from the Iberians, *Chorzena* and *Gogorena* on the other side of the *Cyrus*; from the *Chalybes* and *Mossynæci*, the provinces of *Parenta* and *Herexena*, which bordered on *Armenia Minor*.

On this occasion, the above mentioned division of the kingdom into *Armenia Major* and *Minor* first took place. *Artaxias* became king of *Armenia Major*, and *Zadriades* of *Armenia Minor*; and this distinction subsists even at this day.

By whom *Artaxias* was succeeded is not known; neither have we any account of the transactions of his reign, farther than that *Antiochus* led a powerful army against him and *Zadriades*, but without being able to recover a single province. Upon this he concluded a peace, designing to fall upon them at a proper opportunity; but they having entered into alliance with the Romans, by that means secured themselves in the possession of their kingdom. After this, *Artaxias* was defeated and taken prisoner by *Antiochus Epiphanes*; but some how or other, seems to have been restored to his kingdom.

From this time we meet with a chasm in the *Armenian* history for 70 years; during which all we know is, that *Tigranes*, the king's son, was delivered up as an hostage to the *Parthians*; from whence it is plain, that the *Armenians* had been carrying on an unsuccessful war with that nation. On the news of his father's death, however, the *Parthians* set the young king at liberty, having first obliged him to give up a considerable part of his kingdom by way of ransom.

Tigranes, being thus restored to his father's kingdom, was prevailed upon in the beginning of his reign to enter into an alliance with *Mithridates Eupator* against the Romans, whose power began to give jealousy to all the princes of Asia. One of the articles of this treaty was, that *Mithridates* should have the cities and conquered countries, and *Tigranes* the captives and plunder. In consequence of this, *Tigranes* was to invade *Cappadocia*, which he had lately been obliged, by a decree of the senate of Rome, to give up to *Ariobarzanes*. *But before either of the princes took the field, a marriage was solemnized with all possible magnificence between *Tigranes* and *Cleopatra* the daughter of *Mithridates*.

Immediately after the nuptials, *Tigranes* set out on his intended expedition; and *Ariobarzanes*, on the first news of his march, abandoned his kingdom and fled to Rome. Thus *Tigranes*, without fighting a stroke, enriched himself with the booty, and then proclaimed *Ariarathes*, *Mithridates*'s son, king of *Cappadocia*, to the universal satisfaction of the people.

In the mean time the Syrians, being harassed with

a long and intestine war of the *Seleucidae*, invited *Tigranes* to come and take possession of their country; which he accordingly did, and kept it for 18 years, till he was driven out by *Pompey*, and Syria reduced to the form of a Roman province. Encouraged by this success, he next invaded *Armenia Minor*; defeated and killed king *Artanes*, who opposed him with a considerable army; and in one campaign made himself master of the whole kingdom. From *Armenia Minor* he marched against the Asiatic Greeks, the *Adiabeni*, the *Assyrians*, and the *Gordians*, carrying all before him, and obliging the people wherever he came to acknowledge him sovereign. From this second expedition he returned home loaded with booty, which he soon after increased by the spoils of *Cappadocia*, invading that kingdom a second time at the instance of *Mithridates*, who had been obliged by the Romans to withdraw his forces from thence. From *Cappadocia*, *Tigranes*, besides other booty, brought back into *Armenia* no fewer than 300,000 captives, having surrounded the country with his numerous forces in such a manner that none could escape. These, together with the prisoners he had taken in his two first expeditions, he employed in building the city of *Tigranocerta*, which they afterwards peopled.

In the mean time *Mithridates*, who had concluded a peace with the Romans for no other end than to gain time, sent a solemn embassy to *Tigranes*, inviting him to enter into a second alliance against the common enemy. This he at first declined; but in the end was prevailed upon by his wife *Cleopatra* to send him considerable supplies, though he never came heartily into the war, not caring to provoke the Romans, who on their part kept fair with him, taking no notice for the present of the supplies he had sent *Mithridates*. That unfortunate prince being soon after defeated by *Lucullus*, was forced to fly for shelter into *Armenia*, where he met with a very cold reception from his son-in-law, who would neither see him, treat with him, nor own him as his relation; however, he promised to protect his person, and allowed him in one of his castles a princely retinue, and a table suitable to his former condition.

Though this total overthrow of *Mithridates* might have opened the eyes of *Tigranes*, and made him oppose with all his might the growing power of the Romans, he foolishly left them to finish their conquest of *Pontus*, while he marched at the head of a very numerous army against the *Parthians*, with a design to recover from them the dominions they had formerly extorted from him before they set him at liberty. These he easily retook; and, not satisfied with what formerly belonged to him, he added to them all *Mesopotamia*, the countries that lay about *Ninus* and *Arbela*, and the fruitful province of *Migdonia*; the *Parthians*, tho' at that time a mighty people, flying every where before him. From *Mesopotamia* *Tigranes* marched into Syria to quell a rebellion which had been raised by *Cleopatra* surnamed *Selene*; who, after the death of her husband *Antiochus Pius*, reigned jointly with her sons in that part of Syria which *Tigranes* had not seized on. The malcontents were quickly reduced; and the queen herself was taken prisoner, and confined to the castle of *Seleucia*, where she was soon after put to death by the king's orders. From Syria *Tigranes* passed

Armenia.

Armenia. fed into Phœnice, which he subdued either entirely or in great part, spreading far and wide the terror of his arms, insomuch that all the princes of Asia, except those who were in alliance with the Romans, either in person or by their deputies, submitted and paid homage to the conqueror.

The king having now subdued all Syria to the borders of Egypt, and being elated with a long course of victories and prosperous events, began to look upon himself as far above the level of other crowned heads. He assumed the title of *King of kings*, and had many kings waiting upon him as menial servants. He never appeared on horseback without the attendance of four kings dressed in livery, who run by his horse; and when he gave answers to the nations that applied to him, the ambassadors stood on either side the throne with their hands clasped together, that attitude being of all others then accounted among the orientals the greatest acknowledgment of vassalage and servitude. In the midst of all this haughtiness, however, he was unexpectedly visited by an ambassador from Lucullus the Roman general, who without any ceremony told him, that he came to demand Mithridates king of Pontus, who had taken refuge in his dominions, and, in case of his refusal, to declare war against him. Notwithstanding his high opinion of himself, Tigranes returned a mild answer to this message: in which, however, he refused to deliver up his father-in-law; and being highly provoked at Lucullus for not giving him the title of *King of kings* in his letter, he did not so much as bestow upon him the title of *General* in his answer. In the mean time, being informed that Zartabienus king of the Gordians had entered into a private alliance with the Romans, he put him, his wife, and children to death; and then returning into Armenia, received with the greatest pomp imaginable his father-in-law Mithridates, whom to that time he had not admitted into his presence, though he had resided a year and eight months in his dominions. They had several private conferences; and at last Mithridates was sent back to Pontus with 10,000 horse, to raise there what disturbances he could.

Lucullus, on the other hand, hearing the king's resolution to protect Mithridates, immediately began his march for Armenia at the head of only two legions of foot and 3000 horse, having left 6000 men in Pontus to keep that country quiet. Having passed the Euphrates without opposition, he detached two parties; one to besiege a city where he heard that Tigranes's treasure and concubines were kept; and the other under Sextilius, to block up Tigranocerta, in order to draw the king to a battle. But Tigranes, after having put to death the scout that brought him the first intelligence of the approach of the Romans, made towards Mount Taurus, which he had appointed for the place of the general rendezvous. The Roman general then dispatched Muræna in pursuit of the king; who having overtaken him in a narrow pass, defeated him, and, besides all the baggage, carried off a great many prisoners, the king himself having fled in the beginning of the skirmish. After this, he sent out several parties to scour the country, in order to prevent the innumerable forces of Tigranes from joining into one body. This, however, he was not able to effect: Tigranes was joined by such numbers of Gordians, Medes, Adiabeniens, Albanians, Iberians, &c. that, before he left Mount

Taurus, his army consisted, according to Plutarch, of Armenia. 150,000 foot armed cap-a-pee, 35,000 pioneers, 20,000 archers and slingers, and 55,000 horse.

Lucullus was so far from being dismayed at this formidable army, that the only fear he had was lest the king should follow the advice of Mithridates, which was not to engage the Romans, but, by ravaging the country, distress them for want of provisions. In order to draw him to a battle, therefore, he formed the siege of Tigranocerta, imagining that Tigranes would never suffer that fine city to be taken without making an attempt to relieve it. The event fully answered his expectations: Tigranes having called a council of war, it was unanimously resolved to attack the Romans; and Taxilis, whom Mithridates sent to dissuade the king from venturing a battle, was in danger of losing his head on account of the advice he gave. The Roman general, finding Tigranes disposed to come to an engagement, left Muræna with 6000 men to carry on the siege, while he himself marched against the king's vast army with only 10,000 men according to some, and the highest computations make them no more than 18,000. The Romans were at first greatly disheartened; but being encouraged by Lucullus, they immediately broke the Armenian army, who betook themselves to flight almost at the first onset. The Romans pursued them till night, making a most terrible slaughter. Plutarch informs us, that of the Armenians 100,000 foot were killed, and that very few of the cavalry escaped; whereas of the Romans only five men were killed and 100 wounded. Antiochus the philosopher mentioning this battle, says, that the sun never beheld the like; and Livy, that the Romans never fought at such a disadvantage; the conquerors not amounting to a twentieth part of the conquered. Tigranes in his flight having met with his son in as forlorn a condition as himself, resigned to him his royal robes and diadem, desiring him to shift for himself and save those royal ensigns. The young prince delivered them to a trusty friend, who, being taken by the Romans, consigned them to Lucullus.

While the king was making his escape after this terrible overthrow, he was met by Mithridates, who was marching to his assistance at the head of a considerable army. The king of Pontus cheered up his son-in-law as well as he could, and encouraged him to continue the war: advising him, instead of fruitlessly bewailing the present disaster, to rally his troops, raise new supplies, and renew the war, not questioning but that in another campaign he might repair all the losses he had sustained: but while the two kings were consulting upon these matters, Lucullus made himself master of Tigranocerta. From this city he marched into the small kingdom of Gordyene, where he celebrated, with the utmost pomp, the obsequies of king Zartabienus, whom Tigranes had put to death, lighting the funeral pile with his own hands. In this kingdom, besides immense sums of gold and silver, he met with such store of provisions as enabled him to carry on the war without putting the republic to any charge.

The two kings having levied new forces, appointed their troops to rendezvous in the spacious plains on the other side of Mount Taurus; whereupon Lucullus, leaving Gordyene, and passing by Mount Taurus, encamped close by the enemy. Several skirmishes happened for some time between the two armies without
any

Armenia. any considerable advantage; but Lucullus could by no means draw them to a general engagement. Upon this he decamped, as if he designed to march to Artaxata and lay siege to that place, where Tigranes had left his wife and children with great part of his treasures. He had scarce formed his camp when the enemy appeared, and sat down close by him. Lucullus did not allow them to fortify their camp, but immediately attacked them; and having put them to flight after a faint resistance, pursued them all night with great slaughter, took most of the chief officers prisoners, and returned the next day loaded with booty.

The Roman soldiers now finding the cold very severe, though it was no later in the year than the autumnal equinox, requested their general to allow them to retire into winter-quarters. This request he rejected with indignation; upon which they mutinied. Lucullus did all he could to persuade them to continue in their duty, and prevailed so far that they consented to lay siege to Nisibis in hopes of booty. This place they took; and Lucullus, to the great satisfaction of his troops, took up his winter-quarters there. The next year, however, his forces again mutinied, accusing him of amassing immense wealth for himself; and throwing their empty purses at his feet, told him, that as he enriched himself alone, he might carry on the war by himself. He endeavoured to appease them as much as possible; but the sedition being fomented by a party who favoured Pompey the Great, at that time aspiring to the command of Lucullus's army, the latter found himself obliged to sit still and see Mithridates and Tigranes over-run Cappadocia, and recover all Armenia and great part of Pontus. They would have gained much greater advantages, had not a son of Tigranes taken arms against his father, and obliged him to divide his troops. The father and son coming to a pitched battle, the latter was defeated, and forced to save himself in Parthia, where he persuaded Phraates, king of that country, to assist him with a numerous army against his father. Phraates having laid siege to Artaxata, Tigranes the elder was obliged to hide himself in the mountainous parts of his kingdom; upon which the king of Parthia returned home. Of this Tigranes the father being apprised, he immediately abandoned the fastnesses of the mountains; and, falling upon his son at Artaxata, dispersed the rebels with great slaughter, and entered his metropolis in triumph. Tigranes the son first fled to Mithridates; but finding him reduced to great straits, having been overcome a few days before, with the loss of 40,000 men, by Pompey, he went over to the Romans, and led them into Armenia against his father as an ally of Mithridates.

Tigranes being now quite dispirited, and unable to make head against the Romans, resolved at once to submit. Accordingly he waited on Pompey in his camp; and having delivered his sword to two lictors, prostrated himself before him, and laid his diadem at his feet. Pompey, however, gave him a gracious reception, restored him the kingdom of Armenia, but fined him of 6000 talents for making war on the Roman people without cause. As the king had appealed to the Roman general for justice against his son, Pompey heard both parties the next day, and made the son

governor of Gordyene and Sophene; but the treasures that were kept in the latter he adjudged to the father, because without them he could not pay the fine. The son being thus disappointed, endeavoured first to make his escape, and afterwards, by private messengers, solicited the inhabitants not to deliver up the treasures to his father. This being taken very much amiss by Pompey, he caused him to be kept in irons; and even then he found means to stir up Phraates king of Parthia, whose daughter he had married, against the Romans, and to form a conspiracy against his father's life; whereupon Pompey sent him in chains to Rome, where he was kept prisoner in the house of L. Flavius, a senator, till the tribuneship of P. Clodius; who, being bribed with a large sum of money, set him at liberty in spite of Pompey and the senate.

Tigranes being now thoroughly humbled, willingly yielded to the Romans Cappadocia, Syria, Silicia, and that part of Phenice which he possessed, contenting himself with his paternal kingdom; and not only paid the fine laid upon him, but made large presents to Pompey, and all the officers of his army, which procured him the title of *the friend and ally of the Roman people*. He afterwards entered into a war with Phraates king of Parthia, by whom he was overcome, and would have been driven out of his kingdom, had not a peace been brought about by the mediation of Pompey. He ever after cultivated a strict friendship with the Romans; inasmuch that he not only refused to receive Mithridates, who fled to him after he had been routed by Pompey near Mount Stella, but even offered a reward of 100 talents to any one that would put him to death. His second son also, by name Sariafter, took up arms against him; but by the assistance of the Romans that rebellion was soon quelled. He died in the 85th year of his age; and was succeeded by his son Artuafdes, called by Josephus *Artabazes*, by Orosius *Artabanes*, and by others *Artoadistes*.

From this time to the time of Trajan, Armenia was governed by its own kings; but as they were plainly vassals to the Romans, though they did not take that title till the reign of the emperor Nero, their history falls to be considered under that of the Romans.

By Trajan the kingdom of Armenia Major was reduced to the form of a Roman province; but it soon recovered its liberty, and was again governed by its own kings in the reigns of Constantine the Great and his successor, to whom the kings of Armenia were feudatories. In the reign of Justin II. the Saracens subdued and held it till the irruption of the Turks, who possessed themselves of this kingdom, and gave it the name of *Turcomania*. The Turks, after the reduction of Armenia, invaded Persia, and other countries subject to the emperors of the east; which gave the Armenians an opportunity of shaking off the Turkish yoke, and setting up kings of their own, by whom they were governed till the country was again subdued by Occadan, or, as some style him, *Heccata*, the son of Cingis, the first cham of the Tartars. Neither was the conquest of Armenia by the Tartars so absolute as to extirpate the race of their kings; seeing we read of Haithon, surnamed the *Armenian*, reigning some time after, and going in person to treat with Mungo, the great cham of Tartary, of the concerns of his kingdom; and in our chronicles we find mention made of

Armenia. Leo king of Armenia, who in the reign of Richard II. came into England to sue for aid against the Turks, by whom he had been driven from his kingdom. In the year 1472 of the Christian æra, Uffan Cassanes king of Armenia succeeding to the crown of Persia, made Armenia a province of that empire; in which state it continued till the year 1522, when it was subdued by Selim II. and made a province of the Turkish empire. Some say that Selim I. reduced it on his return from Persia, where he had gained a complete victory over the great Sophi Ismael. But Sansovin assures us, that in the reign of Selim I. who died in 1520, both the Lesser and Greater Armenia had their own kings; and adds, that Selim caused the head of the king of the Lesser Armenia to be cut off and sent to Venice as a mark of his victory. We read no where else of any kings of Armenia after it became a province of Persia. Be that as it will, the Turkish annals cited by Calvius inform us, that Selim II. conquered Armenia in 1522, since which time it has ever continued subject to the Turks, except the eastern part, which the Persians are masters of to this day.

Concerning Armenia Minor we find very little recorded, except what has been already mentioned, and what falls under the Roman history. It was made a Roman province by Vespasian, continued so till the division of the empire, when it was subjected to the emperors of the east; and on the decline of their power, was subdued first by the Persians, and afterwards by the Turks, who gave it the name of *Genech*, and have kept it ever since.

This country is still divided into the Great and Small. Great Armenia comprehends what is now called *Turcomania*. It has Georgia on the north, from which it is separated by high mountains; the river Euphrates on the west; Diarbeker, Curdistan, and Aderbijan, on the south; and Shirvan on the east. The chief towns in that part of Armenia belonging to Turkey are, Arzum the capital, near the springs of the Euphrates, a large city and a great thoroughfare for the caravans between Turkey and Persia; Kara, a strong city, head of the government of the same name; Bayazid, a republic of Hurds, near mount Ararat; Baha, another republic of the same; and Van or Wan, on the lake Van, the head of a government of the same name; with other towns of less note. That part of Armenia subject to Persia is chiefly contained in the province of Aran, in which are several fine towns; as, Erivan or Rivan, the capital of the whole; Ganjals, one of the finest cities in Persia, in the north of the province, near the Kur; Kapan, on the south side, near the Aras; besides Nakchivan, Aftabad Julfa, Ordabad, Baylakan or Pilkan, on the Aras; Berdah and Shilkah on the Kur.

The country in general is full of mountains and valleys, lakes, and rivers; particularly the country about the three churches, near Erivan, is admirably fine, being full of rivulets, which render it extremely fruitful. Besides great quantities of all sorts of grain, here are fields of a prodigious extent covered with tobacco: but it is not a native of the place, though supposed by some to be the terrestrial paradise; for it all came originally from America. The rest of the country produces rice, cotton, flax, melons, and grapes; in short, there is nothing wanting but olives; which is by some

thought to prove that the ark could not rest on mount Ararat, because the dove brought an olive branch in her mouth, and this tree never leaves a place where it once grew. It seems, however, to have been otherwise anciently; for Strabo tells us, that the olive grew in Gogarene, a province of Armenia. They get oil to burn from the ricinus, and use linseed oil in the kitchen. The water-melons are as cool as ice in the hottest day, and melt in the mouth; the best are produced in the salt-lands, near the three churches and the river Aras. After rain, the sea-salt lies in crystals upon the fields, and even crackles under the feet. About ten miles from the three churches, in the road to Teflis, there are pits or quarries of fossile salt, which yield enough to supply all Persia, without being exhausted: they cut it into large pieces like stone, and each buffalo carries two of them; the mountain from whence it is dug is nothing but a mass of salt, which appears like a rock of silver, when the sun shines, on the places not covered with earth.

This country has been remarkable for its extreme cold from the remotest antiquity; Sir John Chardin tells us, that he found ice in the rivulets in the morning even of the month of July. In many places, also, if they had not the convenience of watering their grounds, they would be almost entirely barren.

The Armenians are an honest, civil, polite, people, scarce troubling themselves about any thing else but trade, which they carry on in most parts of the world, by which means they have spread themselves over the east, and also a great part of Europe; and wherever they come, commerce is carried on with spirit and advantage.

The religion of the Armenians is the Christian, of the Eutychian sect: that is, they own but one nature in Jesus Christ; and when they speak of the hypostatical union, that he is perfect God and perfect man without mixture. They have a high esteem for a book they call the *Little Gospel*, which treats of the infancy of Jesus, and says that the Virgin Mary being pregnant, her sister Salome accused her of having prostituted herself; to which the Virgin answered, that she needed only to lay her hand on her belly, and she would know how she came to be with child: this Salome accordingly did, and fire came out of her belly, which consumed the half of her arm; upon which she acknowledged her fault, and drew it back: after which it was healed by putting it to the same place.

The Armenian clergy consist of patriarchs, archbishops, doctors, secular priests, and monks. The secular priests are not allowed to marry a second time; and therefore they take care to choose young healthy wives: they maintain themselves and families by following some occupation, insomuch that they have hardly time to perform their ecclesiastical functions: they lie in the churches on the vigils of those days they are obliged to officiate.

The Armenian monks are of the order of St Basil; and every Wednesday and Friday they eat neither fish, nor eggs, nor oil, nor any thing made of milk, and during Lent they live upon nothing but roots: they are allowed wine only on the Saturday in the Holy Week, and meat on the Easter Sunday. Besides the great Lent they have four others of eight days each, which are instituted to prepare for the four great festivals.

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vals of the Nativity, the Ascension, the Annunciation, and of St George; in which times they must not so much as speak of eggs, fish, oil, or butter.

The Armenians have seven sacraments; baptism, confirmation, penance, the eucharist, extreme unction, orders, and matrimony. In baptism, the child is plunged three times into the water, and the same form of words that is used with us is repeated every time; the priest then puts a small cord made with silk and cotton on the neck of the infant, and anoints his forehead, chin, stomach, arm-pits, hands, and feet, making the sign of the cross on each part. When the child is baptized, he is carried home by the godfather with the sound of drums and trumpets. The women do not go to church till forty days after their delivery; and they observe many Jewish customs.

At the communion, to which infants of two or three months old are admitted, the priests give a piece of the consecrated host soaked in the consecrated wine. The elements are covered with a great veil, and placed in a cup-board near the altar, on the side of the gospels. When the priest takes the chalice and patten, he is followed by his deacons and subdeacons, with flambeaux and plates of copper furnished with bells: in this manner, with a censer before him, he goes in procession round the sanctuary; he then sets them on the altar, pronounces the words of consecration, and turns himself to the people, who fall down, kiss the earth, and beat their breasts; then, after taking it himself, he distributes the host soaked in wine to the people.

The Armenians seem to place the chief part of their religion in fastings and abstinences: and among the clergy, the higher the degree the lower they must live: inasmuch that it is said the archbishops live on nothing but pulse. They consecrate holy water but once a-year; at which time every one fills a pot and carries it home, which brings in a considerable revenue to the church.

ARMENIACA. See PRUNUS.

ARMENIAN, something belonging to or produced in Armenia: thus we say, *Armenian bole*, *Armenian stone*, &c. See BOLE, and ARMENUS LAPIS.

ARMENTIERS, a small handsome town of the Netherlands, in the county of Flanders, and district of Ypres. It was taken by Louis XIV. in 1667, who dismantled it; and it now belongs to the French. It is seated on the river Lis. E. Long. 3. 3. N. Lat. 50. 40.

ARMENUS LAPIS, *Armenian stone*, in natural history, a mineral substance, which is but improperly called a *stone*; being no other than an ochreous earth, and properly called *blue ochre*. It is a very valuable substance in painting, being a bright and lively blue. It was in so high esteem as a paint among the ancients, that counterfeits were continually attempted to serve in its place. Theophrastus has recorded it as a thing judged worthy a place in the Egyptian annals, which of their kings had the honour of inventing the factitious kind; and he tells us the genuine native substance was a thing of that value, that presents were made of it to great persons, and that the Phœnicians paid their tribute in it.—It is a very beautiful earth, of an even and regular texture; and of a fine blue, sometimes deeper, sometimes paler, and frequently mixed with green. It is soft, tender, and light; of an even, but somewhat dusty

surface; it adheres firmly to the tongue, and is dry, but not harsh to the touch. It easily breaks between the fingers, and does not stain the hands. It is of a brackish disagreeable taste, and does not ferment with acids. It is a very scarce fossil; but is found very pure, though in but small quantities, in the mines at Gosselaer in Saxony. It is frequently found spotted with green, and sometimes with black; and very often is mixed among the green ochre, called *berggruen* by the Germans, which has thence been erroneously called by its name. See further the article BICE.

AMIERS, a town of Hainault, in the French Netherlands, seated on the river Samber. E. Long. 3. 45. N. Lat. 50. 15.

ARMIGER, a title of dignity, belonging to such gentlemen as bear arms: and these are either by courtesy, as sons of noblemen, eldest sons of knights, &c.; or by creation, such as the king's servants, &c. See ESQUIRE.

ARMILLARY, in a general sense, something consisting of rings or circles.

ARMILLARY Sphere, an artificial sphere composed of a number of circles of the mundane sphere, put together in their natural order, to ease and assist the imagination in conceiving the constitution of the heavens, and the motions of the celestial bodies. The armillary sphere revolves upon its axis within a silvered horizon, which is divided into degrees, and moveable every way upon a brass supporter. The other parts are the equinoctial, zodiac, meridian, the two tropics, and the two polar circles. See GEOGRAPHY.

ARMILUSTRIUM, in Roman antiquity, a feast held among the Romans, in which they sacrificed, armed, to the sound of trumpets.

ARMINIANS, a religious sect, or party, which arose in Holland by a separation from the Calvinists. They followed the doctrine of Arminius (see the next article); who thinking the doctrine of Calvin, with regard to free-will, predestination, and grace, too severe, began to express his doubts concerning them in the year 1591; and upon farther inquiry adopted sentiments more nearly resembling those of the Lutherans than of the Calvinists. After his appointment to the theological chair at Leyden, he thought it his duty to avow and vindicate the principles which he had embraced; and the freedom with which he published and defended them exposed him to the resentment of those that adhered to the theological system of Geneva, which then prevailed in Holland; but his principal opponent was Gomar, his colleague. The controversy which was thus begun, became more general after the death of Arminius, in the year 1609, and threatened to involve the United Provinces in civil discord. The Arminian tenets gained ground under the mild and favourable treatment of the magistrates of Holland, and were adopted by several persons of merit and distinction. The Calvinists, or Gomarists, as they were now called, appealed to a national synod: accordingly the synod of Dort was convened by order of the States-General, in 1618, and was composed of ecclesiastical deputies from the United Provinces, as well as from the reformed churches of England, Hesse, Bremen, Switzerland, and the Palatinate. The principal advocate in favour of the Arminians was Episcopius, who, at that time, was professor of divinity at Leyden. It was first proposed

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Arminians. posed to discuss the principal subjects in dispute, and that the Arminians should be allowed to state and vindicate the grounds on which their opinions were founded: but some difference arising as to the proper mode of conducting the debate, the Arminians were excluded from the assembly; their case was tried in their absence; and they were pronounced guilty of pestilential errors, and condemned as corrupters of the true religion. In consequence of this decision, they were treated with great severity; they were deprived of all their posts and employments; their ministers were silenced, and their congregations were suppressed. However, after the death of prince Maurice, who had been a violent partizan in favour of the Gomarists, in the year 1625, the Arminian exiles were restored to their former reputation and tranquillity; and under the toleration of the state, they erected churches and founded a college at Amsterdam, appointing Episcopius to be the first theological professor. The Arminian system has very much prevailed in England since the time of archbishop Laud, and its votaries in other countries are very numerous.

The distinguishing tenets of the Arminians may be comprised in the following five articles; relating to predestination, universal redemption, the corruption of man, conversion, and perseverance.

1. With respect to the first, they maintained, "That God, from all eternity, determined to bestow salvation on those who he foresaw would persevere unto the end in their faith in Christ Jesus; and to inflict everlasting punishments on those who should continue in their unbelief, and resist unto the end his divine succours: so that election was conditional, and reprobation in like manner the result of foreseen infidelity and persevering wickedness."

2. On the second point the Arminians taught, "That Jesus Christ, by his sufferings and death, made an atonement for the sins of all mankind in general, and of every individual in particular; that, however, none but those who believe in him can be partakers of their divine benefit."

3. On the third article, they held, "That true faith cannot proceed from the exercise of our natural faculties and powers, nor from the force and operation of free will; since man, in consequence of his natural corruption, is incapable either of thinking or doing any good thing; and that therefore it is necessary, in order to his conversion and salvation, that he be regenerated and renewed by the operation of the Holy Ghost, which is the gift of God through Jesus Christ."

4. "That this divine grace, or energy of the Holy Ghost, begins and perfects every thing that can be called good in man, and consequently all good works are to be attributed to God alone; that, nevertheless, this grace is offered to all, and does not force men to act against their inclination, but may be resisted and rendered ineffectual by the perverse will of the impenitent sinner." Some modern Arminians interpret this and the last article with a greater latitude.

5. "That God gives to the truly faithful, who are regenerated by his grace, the means of preserving themselves in this state;" and though the first Arminians made some doubt with respect to the closing part of this article, their followers uniformly maintain,

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"that the regenerate may lose true justifying faith, Arminius, forfeit their state of grace, and die in their sins."

The modern system of Arminianism likewise, founded on a comprehensive plan projected by Arminius himself, as appears from a passage in his last will, extends the limits of the Christian church, and relaxes the bonds of fraternal communion in such a manner, that Christians of all sects and denominations, whatever their sentiments and opinions may be, Papists excepted, may be formed into one religious body, and live together in brotherly love and concord. But, in order to avoid the reproach of being altogether unconnected by any common principles, Episcopius drew up a confession of faith, expressed for the most part in words and phrases of Holy Scripture, which the Arminians have generally adopted, though not enjoined upon them by any authoritative obligation. The Arminians are also called *Remonstrants*, from an humble petition entitled their *Remonstrance*, which, in the year 1610, they addressed to the States of Holland. Their principal writers are Arminius, Episcopius, Vorstius, Grotius, Curcellæus, Limborch, Le Clerc, and Wetstein; not to mention many others of more modern date.

ARMINIUS (James), whose real name in Low Dutch was James Harmanni, a famous Protestant divine, from whom the modern sect of Arminians (see the preceding article) take their name, was born at Oude-water, in Holland, in 1560. He was ordained minister at Amsterdam on the 11th of August 1588; when he soon distinguished himself by his sermons, which were remarkable for their solidity and learning, and gained him universal applause: but Martin Lydias, professor of divinity at Franker, judging him a fit person to refute a writing in which Beza's doctrine of predestination had been attacked by some ministers of Delft, Arminius at his intreaties undertook the task; but upon thoroughly examining the reasons on both sides, he came into the opinions he proposed to destroy, and afterwards went still farther than the ministers of Delft had done. In 1600, he opposed those who maintained that ministers should subscribe the confession and catechism every year. In 1602, a pestilential disease raged at Amsterdam, during which he acted with the greatest resolution and courage, in assisting the poor, and comforting the sick; and Lucas Trelocatius and Francis Junius dying of that disease at Leyden, the curators of that university chose Arminius professor of divinity there, and he was afterwards made doctor of divinity. Disputes upon grace were soon after kindled in that university; and he was at length engaged in a new contest, occasioned by a disputation of his concerning the divinity of the Son. These contests, his continual labour, and the concern of seeing his reputation blasted by a multitude of slanders in relation to his opinions, impaired his health, and threw him into a fit of sickness, of which he died on the 19th of October 1609. Arminius was esteemed an excellent preacher: his voice was low, but very agreeable; and his pronunciation admirable: he was easy and affable to persons of all ranks, and facetious in his conversation amongst his friends. His great desire was, that Christians would bear with one another in all controversies which did not affect the fundamentals of their religion; and when they persecuted each other for points of in-

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difference, it gave him the utmost dissatisfaction. The curators of the university of Leyden had so great a regard for him, that they settled a pension upon his wife and children. He left several works, viz. 1. "Disputationes de diversis Christianæ religionis capitibus. 2. Orationes, itemque tractatus insigniores aliquot. 3. Examen modesti libelli Gulielmi Perkinfi de prædestinationis modo et ordine, itemque de amplitudine gratiæ divinæ. 4. Analysis capitis noni ad Romanos. 5. Dissertatio de vero et genuino sensu capitis septimi epistolæ ad Romanos. 6. Amica collatio cum D. Francisco Junio de prædestinatione per literas habita. 7. Epistola ad Hippolytum a collibus."

ARMIRO, a town of Macedonia, in European Turkey, seated on the Gulph de Velo. E. Long. 23. 40. N. Lat. 38. 34.

ARMISTICE, in military affairs, a temporary truce or cessation of arms for a very short space of time. The word is Latin *armistitium*; and compounded of *arma*, "arms," and *sto* "to stand, or stop."

ARMOISIN, a silk stuff, or kind of taffety, manufactured in the East Indies, at Lyons in France, and at Lucca in Italy. That of the Indies is slighter than those made in Europe.

ARMONIC. See AMMONIAC.

ARMONICA. See HARMONICA.

ARMORIAL, something relating to arms or coats of arms. See ARMS and HERALDRY.

ARMORIC, or AREMORIC, something that belongs to the province of Bretagne, or Brittany, in France. The name *Armorica* was anciently given to all the northern and western coast of Gaul, from the Pyreneans to the Rhine; under which name it was known even in Cæsar's time. The word is of Bas Breton origin, and denotes as much as *maritime*; compounded, according to M. Menage, of *ar*, "upon," and *mare*, "sea."

ARMORIST, a person skilled in the knowledge of armoury.

ARMORUM CONCUSSIO, the clashing of armour practised by the Roman armies previous to an engagement, and intended to strike a panic into their enemies: It always followed the *Clasicum* and the *Barritus*. See CLASSICUM and BARRITUS.

ARMOUR a defensive habit, wherewith to cover and secure the body from the attacks of an enemy. In ancient statutes this is frequently called *barnefs*.—Parts of armour are, the buckler, cuirass, helmet, coat of mail, gantlet, &c.

A complete armour anciently consisted of a casque or helm, a gorget, cuirass, gantlets, tasses, brassets, cuisses, and covers for the legs, to which the spurs were fastened. This they called *armour cap-a-pie*; and was the wear of the cavaliers and men at arms.—The infantry had only part of it; viz. a pot or head-piece, a cuirass, and tasses; but all light. Lastly, the horses themselves had their armour, wherewith to cover the head and neck.—Of all this furniture of war, scarce any thing is now retained except the cuirass; the gorget or neck-piece, worn by officers, being at present only a badge of honour, and of no defence.

The gallantry of going to the battle naked, without any defensive armour, prevailed so far, that the French, during the reign of Louis XIV. were obliged to be continually issuing ordonnances to restrain it; in consequence of which the general officers, and those of the

cavalry, were obliged to resume the cuirass, which yet has been but ill observed.

ARMOUR, *Coat*, is the escutcheon of any person, or family, with its several charges and other furniture; as mantling, crest, supporters, mottos, &c.—Thus we say, a gentleman of coat-armour; meaning one who bears arms.

ARMOURER, a maker of arms, or armour.—The Roman armourers were disposed in certain places in the empire, it being forbid either to sell, or buy, or make arms elsewhere. They were exempt from all offices and taxes, and received a salary from the public.

When once they had taken the employment on themselves, neither they, nor their children, were allowed to quit it. To prevent this, they had a kind of note, or stigma, impressed on the arm, whereby they might be known. If any of them fled, or secreted their ware, the rest were obliged to answer for him; on account of which, the effects of such as died without a legal heir went to the college.—There were 15 armanentaries, or repositories of arms, in the Eastern empire, placed near the frontiers, and 19 in the Western.

ARMOURER of a Ship, a person whose office is to take care that the arms be in a condition fit for service.

ARMOURY, a store-house of arms, or a place wherein military habiliments are kept, to be ready for use. There are armouries in the Tower, and in all arsenals, citadels, castles, &c.

ARMOURY is also used for a branch of heraldry; being the knowledge of coat-armours, as to their blazons, and various intendments.

ARMOZA, or HARMOZIA, a town in Carmania, at the mouth of the Anamis, which falls into the Persian gulf, (Arrian); *Armusa*, (Ptolemy); and from this the neighbouring island, and a small kingdom, take the modern name of *Ormus*, E. Long. 56. 17. N. Lat. 27. 20.

ARMS, ARMA, in a general sense, includes all kinds of weapons, whether for defence or offence. Nicod derives the word from the Latin phrase *quod operiant armos*, because they cover the shoulders or sides; but Varro derives *arma*, *ab arcendo*, *eo quod arceant hostes*. It is supposed that the first artificial arms were of wood, and were only employed against beasts; and that Belus, the son of Nimrod, was the first that waged war: whence, according to some, came the appellation *bellum*. Diodorus Siculus takes Belus to be the same with Mars, who first trained soldiers up to battle.—Arms of stone, and even of brass, appear to have been used before they came to iron and steel. Josephus assures us, that the patriarch Joseph first taught the use of iron arms in Egypt, arming the troops of Pharaoh with a casque and buckler.

What contributed most to render the Romans masters of the world, was, that having successively warred against all nations, they constantly renounced their own methods, arms, &c. whenever they met with better. Thus Romulus during his war with the Sabines, a bold and warlike nation, adopted their broad buckler in lieu of the small Argian buckler, which he had used till that time.

The principal arms of the ancient Britons were hatchets, scythes, lances, swords, and bucklers: the Saxons, &c. brought in the halbard, bow, arrows, arbalets, &c. By the ancient laws of England, every man

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Arms. was obliged to bear arms, except the judges and clergy. Under Henry VIII. it was expressly enjoined on all persons to be regularly instructed, even from their tender years, in the exercise of the arms then in use; viz. the long bow and arrows; and to be provided with a certain number of them. 33 H. VIII.

ARMS, *Arma*, in law, are extended to any thing which a man takes in his hand in his wrath, to cast at, or strike another.

By the common law, it is an offence for persons to go or ride armed with dangerous weapons: but gentlemen may wear common armour, according to their quality, &c. 3d Inst. The king may prohibit force of arms, and punish offenders according to law; and herein every subject is bound to be aiding. Stat. 7. Edw. I. None shall come with force and arms before the king's justices, nor ride armed in affray of the peace, on pain to forfeit their armour, and to suffer imprisonment, &c. 2d Ed. III. c. 3.

The importation of arms and ammunition are prohibited by 1 Jac. II. c. 8. and by 1 W. and M. stat. 2. c. 2. Protestant subjects may have arms for their defence. So likewise arms, &c. shipped after prohibition, are forfeited, by 29 Geo. I. c. 16. sec. 2.

Arms of offence in use among us at present are, the sword, pistol, musket, bayonet, pike, &c.

The arms of the Highlanders are, the broad sword, target, poinard, and whinyar or durk, &c.—There are several acts of parliament for disarming the Highlanders; see 1 Geo. I. c. 54.; 11 Geo. I. c. 26.; 19 Geo. II. c. 39.; 21 Geo. II. c. 34.; 26 Geo. II. c. 22. and 29.

Fire-Arms are those charged with powder and ball: such are cannon, mortars, and other ordnance; muskets, carabines, pistols, and even bombs, granadoes, carcasses, &c. In the History of the Royal Academy for the year 1707, we have an account of some experiments made with fire-arms differently loaded, by M. Cassini. Among other things he observes, that by loading the piece with a ball which is somewhat less than the calibre, and only laying a little gunpowder below the ball and a good deal above it, it will yield a vehement noise, but have no sensible effect or impulse on the ball.—This he takes to have been all the secret of those people who pretended to sell the art of rendering one's self invulnerable, or shot-proof.

ARMS, pass of, was a kind of combat in use among the ancient cavaliers.

ARMS, stand of. A stand of arms signifies a musket, a bayonet, a sword, belt, and cartridge-box.

ARMS of parade, or courtesy, were those used in the ancient jousts and tournaments; which were commonly unshod lances, swords without edge or point, wooden swords, and even canes.

ARMS denote the natural weapons, or parts of defence of beasts: as claws, teeth, tusks of elephants, beaks of birds, &c.

ARMS are also used figuratively for the profession of a soldier. Thus we say, he was bred to arms.

ARMS, or *armories*, are also used in heraldry for marks of dignity and honour, regularly composed of certain figures and colours, given or authorised by sovereigns, and borne in banners, shields, coats, &c. for the distinction of persons, families, and states; and passing by descent to posterity.—They are called *arms*,

in regard they are borne principally on the buckler, cuirass, banners, and other apparatus of war. They are also called *coats of arms*, *coat armour*, &c. because anciently embroidered on sur-coats, &c. See HERALDRY.—Some will have the name to have been first occasioned by the ancient knights, who in their jousts and tournaments bore certain marks (which were frequently their mistress's favours) in their armour, *i. e.* their helmet or shield, to distinguish them from each other.

ARMS, at present, follow the nature of titles, which being made hereditary, these are also become so, being the several marks for distinguishing of families and kindreds, as names are of persons and individuals.

ARMS are variously distinguished by the *Heralds*.

ARMS of alliance, are those which families or private persons join to their own, to denote the alliances which they have contracted by marriage.

ARMS, assumptive, are such as a man has a right to assume of himself, in virtue of some gallant action.

As, if a man who is no gentleman, of blood, nor has coat armour, takes a gentleman, lord, or prince, prisoner, in any lawful war; he becomes intitled to bear the shield of such prisoner, and enjoy it to him and his heirs. The foundation hereof is that principle in military law, that the dominion of things taken in lawful war passes to the conqueror.

ARMS, canting, are those wherein the figures bear an allusion to the name of the family.—Such are those of the family of La Tour in Auvergne, who bear a tower; that of the family of Prado in Spain, whose field is a meadow. Most authors hold these the most noble and regular, as is shown by an infinity of instances produced by father Varenne and Menetrier.—They are much debased when they come to partake of the *Rebus*.

ARMS, charged, are such as retain their ancient integrity and value, with the addition of some new honourable charge or bearing, in consideration of some noble action.

ARMS of community, are those of bishoprics, cities, universities, and other bodies corporate.

ARMS of concession, or augmentation of honour, are either entire arms, or else one or more figures given by princes, as a reward for some extraordinary service.

ARMS of dominion, are those which emperors, kings, and sovereign states bear: being annexed to the territories which they possess. Thus the three lions are the arms of England; the fleurs de lys those of France, &c.

ARMS of family, or paternal arms, are such as belong to a particular family, and which no other person has a right to assume.

ARMS, full, or entire, are such as retain their primitive purity, integrity, or value; without any alterations, diminutions, abatements, or the like.—It is a rule, that the simpler and less diversified the arms, the more noble and ancient they are. For this reason Garcias Ximenes, first king of Navarre, and his successors for several ages, bore only gules, without any figure at all.

The arms of princes of the blood, of all younger sons, and junior families, are not pure and full; but distinguished and diminished by proper differences, &c.

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Arms of patronage, are those which governors of provinces, lords of manors, &c. add to their family arms, in token of their peculiar superiority and jurisdiction.

Arms of pretension, are those of such kingdoms or territories to which a prince or lord has some claim, and which he adds to his own, though the kingdoms or territories be possessed by a foreign prince or other lord. Thus the kings of England have quartered the arms of France with their own, ever since the claim of Edward III. to that kingdom, in 1330.

Arms of succession, are assumed by those who inherit estates, manors, &c. by will, entail, or donation, and which they either impale or quarter with their own arms.

Arms are also said to be *parted, coupé, quartered*, &c.

Arms are said to be *false* and *irregular*, when there is something in them contrary to the established rules of heraldry. As, when metal is put on metal, or colour on colour, &c.

The laws, and other affairs of arms, with the cognizance of offences committed therein, belong, among us, to the earl-marshal and college of arms.

Arms in falconry, denote the legs of an hawk, from the thigh to the foot. See FALCONRY.

ARMSTRONG (Dr John), an eminent physician, poet, and miscellaneous writer, was born in Castleton parish, Roxburghshire, where his father and brother were ministers: completed his education in the university of Edinburgh, where he took his degree in physic, Feb. 4. 1732, with much reputation; and published his thesis, as the forms of that university require; the subject was *De tabe purulenta*. In 1735 he published a little humorous fugitive pamphlet in 8vo, entitled, "An essay for abridging the Study of Physic; to which is added a Dialogue betwixt Hygeia, Mercury, and Pluto, relating to the Practice of Physic, as it is managed by a certain illustrious Society. As also an Epistle from Usbek the Persian to Joshua Ward, Esq." This piece contains much fun and drollery; in the dialogue, he has caught the very spirit of Lucian. In 1737 he published A Synopsis of the History and Cure of the Venereal Diseases 8vo. This was soon followed by the *Oeconomy of Love*; a poem which has much merit; but, it must be confessed, is too strongly tinged with the licentiousness of Ovid. It is said, however, that his maturer judgment expunged many of the luxuriences of youthful fancy, in an edition "revised and corrected by the author" in 1768. It appears by one of the cases on literary property, that Mr Millar paid 50 guineas for the copyright of this poem, which was intended as a burlesque on some dictatic writers. It has been observed of Dr Armstrong, that his works have great inequalities, some of them being possessed of every requisite to be fought after in the most perfect composition, while others can hardly be considered as superior to the productions of mediocrity. *The Art of preserving Health*, his best performance, which was published in 1744, will transmit his name to posterity as one of the first English writers, has been honoured with the following testimony of a respectable critic. On this work we shall also transcribe a beautiful elogium from an eminent physician*: "Of all the poetical performances

* Dr Mac-
kenzie's
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on this subject that have come to my hands, Dr Armstrong's Art of preserving Health is by far the best. To quote every charming description and beautiful passage of this poem, one must transcribe the whole. We cannot, however, expect new rules, where the principal design was to raise and warm the heart into a compliance with the solid precepts of the ancients, which he has enforced with great strength and elegance. And, upon the whole, he has convinced us, by his own example, that we ought not to blame antiquity for acknowledging

One power of phyllic, melody, and song."

In 1746 Dr Armstrong was appointed one of the physicians to the hospital for lame and sick soldiers behind Buckingham house. In 1751 he published his poem on Benevolence, in folio; and in 1753, "Taste, an epistle to a young critic. In 1758 appeared, "Sketches or Essays on various subjects, by Launcelot Temple, Esq; in two parts." In this production, which possesses much humour and knowledge of the world, and which had a remarkably rapid sale, he is supposed to have been assisted by Mr Wilkes. In 1760 he had the honour of being appointed physician to the army in Germany, where in 1761 he wrote a poem called "Day, an Epistle to John Wilkes of Aylesbury, Esq;" In this poem, which is not collected in his works, he wantonly hazarded a reflection on Churchill, which drew on him the serpent-toothed vengeance of that severest of satirists, whose embalming or corrosive pen could deify or lampoon any man, according as he acquiesced with, or dissented from, his political principles. In 1770 Dr Armstrong published a collection of "Miscellanies in 2 vols; containing, 1. The Art of preserving Health. 2. Of Benevolence, an Epistle to Eumenes. 3. Taste, an Epistle to a young Critic, 1753. 4. Imitations of Shakespeare and Spenser. 5. The Universal Almanac, by Nouredin Ali. 6. The Forced Marriage, a tragedy. 7. Sketches." In 1771 he published "A short Ramble through some parts of France and Italy, by Launcelot Temple;" and in 1773, in his own name, a quarto pamphlet, under the title of *Medical Essays*; towards the conclusion of which, he accounts for his not having such extensive practice as some of his brethren, from his not being qualified to employ the usual means, from a ticklish state of spirits, and a distempered excess of sensibility. He complains much of the behaviour of some of his brethren, of the herd of critics, and particularly of the reviewers. He died in Sept. 1779; and to the no small surprise of his friends, left behind him more than L. 300 saved out of a very moderate income, arising principally from his half-pay.

ARMUYDEN, a sea-port town of the United provinces, in the island of Walcherin, formerly very flourishing; but now inconsiderable, the sea having stopped up the harbour. The salt-works are its chief resource. E. Long. 340. N. Lat. 51. 30.

ARMY, a large number of soldiers, consisting of horse and foot, completely armed, and provided with artillery, ammunition, provision, &c. under the command of one general, having lieutenant-generals, major-generals, brigadiers, and other officers, under him. An army is composed of squadrons and battalions; and is usually divided into three corps, and formed into three lines: the first line is called the *van-guard*, the second the *main-body*, and the third the *rear-guard* or *body*

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Army.

Army. body of reserve. The middle of each line is possessed by the foot; the cavalry form the right and left wing of each line; and sometimes they place squadrons of horse in the intervals between the battalions. When the army is drawn up in order of battle, the horse are placed at five feet distance from each other, and the foot at three. In each line the battalions are distant from each other 180 feet, which is nearly equal to the extent of their front; and the same holds of the squadrons, which are about 300 feet distant, the extent of their own front. These intervals are left for the squadrons and battalions of the second line to range themselves against the intervals of the first, that both may more readily march thro' these spaces to the enemy: the first line is usually 300 feet distant from the second, and the second from the third, that there may be sufficient room to rally when the squadrons and battalions are broken. See the article WAR.

This is to be understood of a land army only. A naval or sea army is a number of ships of war, equipped and manned with sailors and mariners, under the command of an admiral, with other inferior officers under him. See NAVAL TACTICS.

It has been observed, that in Europe a prince with a million of subjects cannot keep an army of above 10,000 men, without ruining himself. It was otherwise in the ancient republics: the proportion of soldiers to the rest of the people, which is now as about 1 to 100, might then be as about 1 to 8. The reason seems owing to that equal partition of lands which the ancient founders of commonwealths made among their subjects; so that every man had a considerable property to defend, and means to defend it with: whereas, among us, the lands and riches of a nation being shared among a few, the rest have no way of subsisting but by trades, art, and the like; and have neither any free property to defend, nor means to enable them to go to war in defence of it, without starving their families. A large part of our people are either artificers or servants, and so only minister to the luxury and effeminacy of the great. While the equality of lands subsisted, Rome, tho' only a little state, being refused the succours which the Latins were obliged to furnish after the taking of the city in the consulate of Camillus, presently raised ten legions within its own walls, which was more, Livy assures us, than they were able to do in his time, though masters of the greatest part of the world. A full proof, adds the historian, that we are not grown stronger; and that what swells our city is only luxury, and the means and effects of it.

Our armies anciently were a sort of militia, composed chiefly of the vassals and tenants of the lords. When each company had served the number of days or months enjoined by their tenure, or the customs of the fees they held, they returned home. The armies of the empire consist of divers bodies of troops furnished by the several circles. The gross of the French armies under the Merovingian race, consisted of infantry. Under Pepin and Charlemagne, the armies consisted almost equally of cavalry and foot: but since the declension of the Carlovingian line, the fees being become hereditary, the national armies, says Le Gendre, are chiefly cavalry.

A well-regulated standing army is greatly superior to

a militia; although a militia, it is to be observed, after serving two or three campaigns, may become equal to a standing army, and in every respect a match for veteran troops. See MILITIA.

One of the first standing armies of which we have any distinct account, in any well authenticated history, is that of Philip of Macedon. His frequent wars with the Thracians, Illyrians, Thessalians, and some of the Greek cities in the neighbourhood of Macedon, gradually formed his troops, which in the beginning were probably militia, to the exact discipline of a standing army. When he was at peace, which was very seldom, and never for any long time together, he was careful not to disband that army. It vanquished and subdued, after a long and violent struggle, indeed, the gallant and well exercised militias of the principal republics of ancient Greece; and afterwards, with very little struggle, the effeminate and ill-exercised militia of the great Persian empire. The fall of the Greek republics and of the Persian empire, was the effect of the irresistible superiority which a standing army has over every sort of militia. It is the first great revolution in the affairs of mankind of which history has preserved any distinct or circumstantial account.

The fall of Carthage, and the consequent elevation of Rome is the second. All the varieties in the fortune of those two famous republics may very well be accounted for from the same cause.

From the end of the first to the beginning of the second Carthaginian war, the armies of Carthage were continually in the field, and employed under three great generals, who succeeded one another in the command; Amilcar, his son-in-law Asdrubal, and his son Annibal; first in chastising their own rebellious slaves, afterwards in subduing the revolted nations of Africa, and lastly, in conquering the great kingdom of Spain. The army which Annibal led from Spain into Italy must necessarily, in those different wars, have been gradually formed to the exact discipline of a standing army. The Romans, in the mean time, tho' they had not been altogether at peace, yet they had not, during this period, been engaged in any war of very great consequence; and their military discipline, it is generally said, was a good deal relaxed. The Roman armies which Annibal encountered at Trebia, Thrasymenus, and Cannæ, were militia opposed to a standing army. This circumstance, it is probable, contributed more than any other to determine the fate of those battles.

The standing army which Annibal left behind him in Spain, had the like superiority over the militia which the Romans sent to oppose it, and in a few years, under the command of his brother the younger Asdrubal, expelled them almost entirely from that country.

Annibal was ill supplied from home. The Roman militia being continually in the field, became in the progress of the war a well-disciplined and well-exercised standing army; and the superiority of Annibal grew every day less and less. Asdrubal judged it necessary to lead the whole, or almost the whole, of the standing army which he commanded in Spain, to the assistance of his brother in Italy. In this march he is said to have been misled by his guides; and in a country which

Army.

Army.

which he did not know, was surprised and attacked by another standing army, in every respect equal or superior to his own, and was entirely defeated.

When Asdrubal had left Spain, the great Scipio found nothing to oppose him but a militia inferior to his own. He conquered and subdued that militia; and in the course of the war, his own militia necessarily became a well-disciplined and well-exercised standing army. That standing army was afterwards carried to Africa, where it found nothing but a militia to oppose it. In order to defend Carthage it became necessary to recal the standing army of Annibal. The disheartened and frequently defeated African militia joined it, and at the battle of Zama composed the greater part of the troops of Annibal. The event of that day determined the fate of the two rival republics.

From the end of the second Carthaginian war till the fall of the Roman republic, the armies of Rome were in every respect standing armies. The standing army of Macedon made some resistance to their arms. In the height of their grandeur it cost them two great wars and three great battles, to subdue that little kingdom; of which the conquest would probably have been still more difficult, had it not been for the cowardice of its last king. The militias of all the civilized nations of the ancient world, of Greece, of Syria, and of Egypt, made but a feeble resistance to the standing armies of Rome. The militias of some barbarous nations defended themselves much better. The Scythian or Tartar militia, which Mithridates drew from the countries north of the Euxine and Caspian seas, were the most formidable enemies whom the Romans had to encounter after the second Carthaginian war. The Parthian and German militias too were always respectable, and upon several occasions gained very considerable advantages over the Roman armies. In general, however, and when the Roman armies were well commanded, they appear to have been very much superior.

Many different causes contributed to relax the discipline of the Roman armies. Its extreme severity was, perhaps, one of those causes. In the days of their grandeur, when no enemy appeared capable of opposing them, their heavy armour was laid aside as unnecessarily burdensome, their laborious exercises were neglected as unnecessary toilsome. Under the Roman emperors, besides the standing armies of Rome, those particularly which guarded the German and Pannonian frontiers, became dangerous to their masters, against whom they used frequently to set up their own generals. In order to render them less formidable, according to some authors Dioclesian, according to others Constantine, first withdrew them from the frontiers, where they had always before been encamped in great bodies, generally of two or three legions each, and dispersed them in small bodies through the different provincial towns, from whence they were scarce ever removed, but when it became necessary to repel an invasion. Small bodies of soldiers quartered in trading and manufacturing towns, and seldom removed from those quarters, became themselves tradesmen, artificers, and manufacturers. The civil came to predominate over the military character; and the standing armies of Rome gradually degenerated into a corrupt, neglected, and undisciplined militia, incapable of resisting the attack of the German and Scythian militias, which soon

afterwards invaded the western empire. It was only by hiring the militia of some of those nations to oppose to that of others, that the emperors were for some time able to defend themselves. The fall of the western empire is the third great revolution in the affairs of mankind, of which ancient history has preserved any distinct or circumstantial account. It was brought about by the irresistible superiority which the militia of a barbarous has over that of a civilized nation; which the militia of a nation of shepherds has over that of a nation of husbandmen, artificers, and manufacturers. The victories which have been gained by militias have generally been not over standing armies, but over other militias in exercise and discipline inferior to themselves. Such were the victories which the Greek militia gained over that of the Persian empire; and such too were those which in latter times the Swiss militia gained over that of the Austrians and Burgundians.

The military force of the German and Scythian nations, who established themselves upon the ruins of the western empire, continued for some time to be of the same kind in their new settlements as it had been in their original country. It was a militia of shepherds and husbandmen, which in time of war took the field under the command of the same chieftains whom it was accustomed to obey in peace. It was therefore tolerably well exercised and tolerably well disciplined. As arts and industry advanced, however, the authority of the chieftains gradually decayed, and the great body of the people had less time to spare for military exercises. Both the discipline and the exercise of the feudal militia, therefore, went gradually to ruin, and standing armies were gradually introduced to supply the place of it. When the expedient of a standing army, besides, had once been adopted by one civilized nation, it became necessary that all its neighbours should follow the example. They soon found that their safety depended upon their doing so, and that their own militia was altogether incapable of resisting the attack of such an army.

The soldiers of a standing army, though they may never have seen an enemy, yet have frequently appeared to possess all the courage of veteran troops, and the very moment that they took the field, to have been fit to force the hardiest and most experienced veterans. In a long peace the generals perhaps may sometimes forget their skill; but where a well-regulated standing army has been kept up, the soldiers seem never to forget their valour.

When a civilized nation depends for its defence upon a militia, it is at all times exposed to be conquered by any barbarous nation which happens to be in its neighbourhood. The frequent conquests of all the civilized countries in Asia by the Tartars, sufficiently demonstrates the natural superiority which the militia of a barbarous has over that of a civilized nation. A well-regulated standing army is superior to every militia. Such an army, as it can best be maintained by an opulent and civilized nation, so it can alone defend such a nation against the invasion of a poor and barbarous neighbour. It is only by means of a standing army, therefore, that the civilization of any country can be perpetuated, or even preserved for any considerable time

Army.

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Army
Arnall,

As it is only by means of a well-regulated standing army that a civilized country can be defended, so it is only by means of it that a barbarous country can be suddenly and tolerably civilized. A standing army establishes, with an irresistible force, the law of the sovereign through the remotest provinces of the empire, and maintains some degree of regular government in countries which could not otherwise admit of any. Whoever examines with attention the improvements which Peter the great introduced into the Russian empire, will find that they almost all resolve themselves into the establishment of a well-regulated standing army. It is the instrument which executes and maintains all his other regulations. That degree of order and internal peace which that empire has ever since enjoyed, is altogether owing to the influence of that army.

Men of republican principles have been jealous of a standing army as dangerous to liberty. It certainly is so, wherever the interest of the general and that of the principal officers are not necessarily connected with the support of the constitution of the state. The standing army of Cæsar destroyed the Roman republic; the standing army of Cromwel turned the long parliament out of doors. But where the sovereign is himself the general, and the principal nobility and gentry of the country the chief officers of the army; where the military force is placed under the command of those who have the greatest interest in the support of the civil authority, because they have themselves the greatest share of that authority; a standing army can never be dangerous to liberty: on the contrary, it may in some cases be favourable to liberty. The security which it gives to the sovereign renders unnecessary that troublesome jealousy which in some modern republics seems to watch over the minutest actions, and to be at all times ready to disturb the peace of every citizen. Where the security of the magistrate, though supported by the principal people of the country, is endangered by every popular discontent; where a small tumult is capable of bringing about in a few hours a great revolution; the whole authority of government must be employed to suppress and punish every murmur and complaint against it. To a sovereign, on the contrary, who feels himself supported not only by the natural aristocracy of the country, but by a well-regulated standing army, the rudest, the most groundless, and the most licentious remonstrances, can give little disturbance. He can safely pardon or neglect them, and his consciousness of his own superiority naturally disposes him to do so. That degree of liberty which approaches to licentiousness can be tolerated only in countries where the sovereign is secured by a well-regulated standing army. It is in such countries only that the public safety does not require that the sovereign should be trusted with any discretionary power for suppressing even the impertinent wantonness of this licentious liberty.

ARNALL (William), a noted political writer in defence of Sir Robert Walpole, was originally an attorney's clerk; but being recommended to Walpole, he employed him for a course of years in writing the *Free Briton* and other papers in defence of his administration. By the report of the secret committee, he appears to have received, in the space of four years, no

less than L. 10,997 : 6 : 8 out of the treasury for his writings! but spending his money as fast as it came, and his supplies stopping on Sir Robert's resignation, he died broken-hearted and in debt, in the 26th year of his age. His invention was so quick, that his honourable employer used to say, no man in England could write a pamphlet in so little time as Arnall.

ARNAUD DE MEYRVEILH, or MEREUIL, a poet of Provence, who lived at the beginning of the 13th century. He wrote a book intitled *Las recastenas de sa comtesse*, and a collection of poems and sonnets. He died in the year 1220. Petrarch mentions him in his *Triumph of Love*.

ARNAUD DE VILLA NOVA, a famous physician, who lived about the end of the 13th and beginning of the 14th century. He studied at Paris and Montpellier, and travelled through Italy and Spain. He was well acquainted with languages, and particularly with the Greek, Hebrew, and Arabic. He was at great pains to gratify his ardent desire after knowledge; but this passion carried him rather too far in his researches: he endeavoured to discover future events by astrology, imagining this science to be infallible; and upon this foundation he published a prediction, that the world would come to an end in the middle of the 14th century. He practised physic at Paris for some time; but having advanced some new doctrines, he drew upon himself the resentment of the university; and his friends, fearing he might be arrested, persuaded him to retire from that city. Upon his leaving France, he retired to Sicily, where he was received by king Frederic of Arragon with the greatest marks of kindness and esteem. Some time afterwards, this prince sent him to France, to attend Pope Clement in his illness; and he was shipwrecked on the coast of Genoa, about the year 1313. The works of Arnaud, with his life prefixed, were printed in one volume in folio, at Lyons, in 1520; and at Basil in 1585, with the notes of Nicholas Tolerus.

ARNAUD D'ANDILLY (Robert), the son of a celebrated Advocate of the Parliament of Paris, was born in 1588; and being introduced young at court, was employed in many considerable offices, all which he discharged with great integrity and reputation. In 1644 he quitted business, and retired into the convent of Port Royal des Champs, where he passed the remainder of his days in a continued application to works of piety and devotion; and enriched the French language with many excellent translations of different writers, as well as with religious compositions of his own. He died in 1674, and his works are printed in 8 vols folio.

ARNAUD (Anthony), brother of the preceding, and a doctor of the Sorbonne, was born in 1612. He published in 1643, *A Treatise on frequent communion*, which highly displeased the Jesuits; and the disputes upon grace, which broke out about this time in the university of Paris, and in which he took a zealous part with the Jansenists, helped to increase the animosity between him and the Jesuits. But nothing raised so great a clamour against him as the two letters he wrote on *Absolution*; in the second of which the faculty of divinity found two propositions which they condemned, and M. Arnaud was expelled the society. Upon this he retired; and during a retreat which lasted near 25 years, he composed that great variety of works which are extant of his, on grammar, geometry, logic, metaphysics,

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taphysics, and theology. In 1679, he withdrew from France, living in obscurity in the Netherlands, and died in 1694. His heart, at his own request, was sent to be deposited in the Port Royal. Arnaud had a remarkable strength of genius, memory, and command of his pen; nor did these decay even to the last year of his life. Mr Bayle says, he had been told by persons who had been admitted into his familiar conversation, that he was a man very simple in his manners; and that unless any one proposed some question to him, or desired some information, he said nothing that was beyond common conversation, or that might make one take him for a man of great abilities; but when he set himself to give an answer to such as proposed a point of learning, he seemed as it were transformed into another man: he would then deliver a multitude of fine things with great perspicuity and learning, and had a particular talent at making himself intelligible to persons not of the greatest penetration.

ARNAY-LE-DUC, a town of France, in the duchy of Burgundy, which carries on a pretty good trade. It is seated on the Auxois, in a valley near the river Aroux. E. Long. 4. 26. N. Lat. 47. 7.

ARNDT (John), a famous Protestant divine of Germany, born at Ballenstad, in the duchy of Anhalt, in the year 1555. At first he applied himself to the study of physic; but falling into a dangerous sickness, he made a vow to change his profession for that of divinity, if he should be restored to health; which he accordingly did upon his recovery. He was minister first at Quedlinburg and then at Brunswick. He met with great opposition in this last city: his success as a preacher raised the enmity of his brethren, who became his bitter enemies. In order to ruin his character, they ascribed a variety of errors to him; and persecuted him to such a degree, that he was obliged to leave Brunswick, and retire to Ilse, where he was minister for three years. In 1611, George Duke of Lunenburg, who had a high opinion of his integrity and sanctity, gave him the church of Zell, and appointed him superintendent of all the churches in the duchy of Lunenburg; which office he discharged for 11 years, and died in 1621. It is reported that he foretold his death, having said to his wife, upon his return home after his last sermon, that now he had preached his funeral sermon. He wrote in High Dutch *A Treatise on true Christianity*, which has been translated into several languages.

ARNE (Dr Thomas Augustine), distinguished by his skill in music, was the son of Mr Arne an upholsterer in Covent Garden, whom Addison is supposed to have characterised in N^o 155 and N^o 160 of *The Tatler*; and brother of Mrs Cibber the player. He was early devoted to music, and soon became eminent in his profession. July 6. 1759, he had the degree of doctor of music conferred on him at Oxford. His compositions are universally applauded, and he was also particularly skilful in instructing vocal performers. He died March 5. 1778, having written the following pieces: *Artaxerxes*, 1762; *The Guardian outwitted*, 1764; *The Rose*, 1778; all of them operas.

ARNHEIM, a town of the Low Countries, in the province of Guelderland, capital of Veluwe. It was adorned with several fine churches, particularly that of

St Walburg and of St Eusebius; which last has a very high tower. The town has five gates, and several fine ramparts, part of which are washed by the Rhine, and the other parts have wide and deep ditches before them. There is a canal made between this place and Nimeguen, at the expence of both towns, on which boats pass backwards and forwards to carry on a trade between them. The air is very healthful; on which account it is inhabited by persons of distinction. E. Long. 5. 55. N. Lat. 52. 0.

ARNICA, LEOPARDS BANE, in botany: A genus of the polygamia superflua order, belonging to the syn-genesia class of plants; and in the natural method ranking under the 49th order, *Compositæ-discoides*. The receptacle is naked; the pappus is simple; and the filaments are five, without antheræ. The

Species are seven, all natives of Ethiopia, except the two following: 1. The montana, with oval leaves, grows naturally on the Alps, and also upon many of the high mountains in Germany, and other cold parts of Europe. The roots of this species, when planted in a proper soil and situation, spread very far under the surface, and put out many entire oval leaves, from between which the flower-stems arise, which grow about a foot and an half high. The top is terminated by a single yellow flower, composed of many florets, like those of the dandelion. These are succeeded by oblong seeds, which are covered with down. 2. The scorpioides, with sawed leaves growing alternately, is a native of Bohemia and Siberia. The roots of this sort are much jointed, and divide into many irregular fleshy off-sets, which are variously contorted; from whence some superstitious persons have imagined that they would expel the poison of scorpions, and cure the wounds made by the sting of that animal.

Culture. The first species delights in a moist shady situation: it may be propagated by parting the roots in autumn when the stalks begin to decay; or by the seeds sown in autumn soon after they are ripe, for those sown in the spring often fail. The second sort is to be propagated in the same manner. Both are very hardy, and require no other care than to be kept free from weeds.

Medicinal Uses. The montana has an acrid bitter taste, and when bruised, emits a pungent odour, which excites sneezing. On this account the country people in some parts of Germany use it in snuff, and smoke it like tobacco. It was formerly represented as a remedy of great efficacy against effusions and suffusions of blood, from falls, bruises, or the like; and it was then also mentioned as a remedy in jaundice, gout, nephritis, &c. but in these affections it is now very little, if at all, employed.

Of late it has been principally recommended in paralytic affections, and in cases where a loss or diminution of sense arises from an affection of the nerves, as in instances of amaurosis. In these it has chiefly been employed under the form of infusion. From a dram to half an ounce of the flowers has been directed to be infused in a pint of boiling water, and taken in different doses in the course of the day: sometimes it produces vomiting, sometimes sweating, sometimes diuresis; but frequently its use is attended with no sensible operation, unless it can be considered as such, that in some cases

Arnica.

Arniseus, cases of paralysis, the cure is said to be preceded by a peculiar prickling, and by shooting pains in the affected parts.

Besides being employed in paralytic affections, it has also been of late represented as a very powerful antispasmodic; and it is said to have been successfully employed in fevers, particularly those of the intermittant kind, and likewise in cases of gangrene. In those diseases it has been said to prove as efficacious as the Peruvian bark, when employed under the form of a pretty strong decoction taken in small doses frequently repeated, or under the form of an electuary with honey.

But as these alleged virtues have not been confirmed by any trials made in Britain, its real influence still remains to be determined by future observations. It is, however, one of those active substances from which something may be expected.

ARNISÆUS (Henningus), a philosopher and physician of great reputation, about the beginning of the 17th century. He was born at Halberstadt in Germany, and was professor of physic in the university of Helmstad. His political works are much esteemed. The most remarkable of them is his book *De autoritate principum in populum semper inviolabili*, printed at Francfort in 1612. In this he maintains that the authority of princes ought not to be violated. He wrote also upon the same doctrine his three books *De jure majestatis*, printed at the same place in 1610; and his *Reflectiones Politicæ*, printed at Francfort in 1615. Having received an invitation to go to Denmark, he went thither, and was made counsellor and physician to the king. He travelled into France and England, and died in November 1635. Besides the pieces already mentioned, he wrote several philosophical, medicinal, and political treatises.

ARNOBIUS, professor of rhetoric at Sicca, in Numidia, towards the end of the third century. It was owing to certain dreams which he had that he became desirous of embracing Christianity. For this purpose he applied to the bishops to be admitted into the church. But they remembering the violence with which he had always opposed the true faith, had some distrust of him; and before they would admit him, insisted on some proofs of his sincerity. In compliance with this demand, he wrote against the Gentiles; wherein he has refuted the absurdities of their religion, and ridiculed their false gods. In this treatise he has employed all the flowers of rhetoric, and displayed great learning: but from an impatience to be admitted into the body of the faithful, he is thought to have been in too great a hurry in composing his work, and thence it is that there does not appear in this piece such an exact order and disposition as could be wished; and not having a perfect and exact knowledge of the Christian faith, he published some very dangerous errors. Mr Bayle remarks, that his notions about the origin of the soul, and the cause of natural evil, and several other important points, are highly pernicious. St Jerom, in his epistle to Paulinus, is of opinion that his style is unequal and too diffuse, and that his book is written without any method; but Dr Cave thinks this judgement too severe, and that Arnobius wants neither elegance nor order in his composition. Vossius styles him *the Varro of the ecclesiastical writers*. Du Pin observes

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that his work is written in a manner worthy of a professor of rhetoric: the turn of his sentiments is very oratorical; but his style is a little African, his expressions being harsh and inelegant. We have several editions of this work of Arnobius against the Gentiles, one published at Rome in 1542, at Basil in 1546 and 1560, at Paris in 1570, at Antwerp in 1582, and one at Hamburgh in 1610, with notes by Gebbard Elmenhorstius, besides many others. He wrote also a piece entitled *De rhetorica institutione*; but this is not extant.

ARNOLD, of Brescia, in Italy, distinguished himself by being the founder of a sect which opposed the wealth and power of the Romish clergy. He went into France, where he studied under the celebrated Peter Abelard. Upon his return to Italy, he put on the habit of a monk, and opened his invectives in the streets of Brescia. The people crowded round him. He told them he was sent to reform abuses, to pull down the proud and to exalt the humble. He then pointed his declamation against the bishops, against the clergy, against the monks, and finally against the Roman Pontiff himself: to the laity only he was indulgent. Churchmen, said he, who hold benefices, bishops who have domains, and monks that have possessions, will all be damned. His hearers shouted approbation. These things, continued he, belong to the prince; he may give them to whom he pleases, but he must give them to the laity. It is on their tithes, and the voluntary contributions of the people, that those sons of God must live: they must be frugal, continent, and mortified.

The church of Brescia was soon thrown into the greatest confusion, and the people, already prejudiced against their ministers, threatened to overturn their altars. The sacred writings he urged in support of his assertions, and from them he denounced the vengeance of heaven against the violators of the law. Indeed, nothing could be more glaringly offensive than the ostentatious parade of the bishops and great abbots, and the soft and licentious lives of the monks and clergy.

In 1139 was celebrated a grand council at Rome; Arnold was cited to appear before it. His accusers were the Bishop of Brescia, and many others, whom he had ridiculed and insulted. Nor from his judges could he look for much indulgence. He was found guilty, and sentenced to perpetual silence. Upon this he left Italy, crossed the Alps, and found a refuge in Zurich.

Though Arnold had quitted Italy, yet had his opinions taken deep root, and Rome itself was infected by them. Irritated by the conduct of their master Innocent II. the Roman people assembled in the Capitol. It was proposed that the power of the pontiff, which they called exorbitant, should be restrained: this was carried: when suddenly, inspired as it were by the genius of the place, they moved that the senate, which for years had been abolished, should be restored. The proposition was received with the loudest acclamations. Innocent in vain opposed the bold design: there was a magic in it which spread irresistibly, and for a moment seemed to rouse the fallen spirit of the nation. The pope viewed with horror the reverse of fortune which threatened the tiara; to be shorn of

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his mighty power, and to become the mere shepherd of the Christian people, was thought too afflicting: he fell sick and died.

Under his two immediate successors Celestin and Lucius, whose reigns were but of a few months, the Romans pursued their darling object. They waited on the latter, and, in an imperious tone, demanded the restitution of all the honours and civil rights which had been usurped from the people. The prince of the senate, said they, whom we have chosen, will best administer the important trust: the tithes and offerings of the faithful will sufficiently answer all the exigencies of your holiness: It was thus that our ancient bishops lived.—Lucius survived this event but a few days. His successor was Eugenius III. the friend and disciple of the renowned Bernard. The night before his consecration the senators assembled, and it was agreed that either he should solemnly confirm all their proceedings, or they would annul his election. This resolution was notified to him. He called together his friends; and it was their advice, that he should neither accede to the extravagant demand, nor expose himself, by a refusal, to the fury of the populace. He therefore silently withdrew from Rome, and retired to a neighbouring fortress. Here the ceremony of his consecration was performed.

Arnold, who in banishment had contemplated the effect of his admonitions on the minds of the Romans, and the success which seemed to follow their exertions, was now informed that the pope had retired, and that the gates of the capital were open to receive him: it was likewise suggested to him, that his presence was more than ever necessary, to give energy to their resolves, form to their plans, and stability to their undertakings. Arnold took fire at the news; an unusual swell of enthusiasm filled his breast; and he fancied that, like Junius Brutus, he was called at once to give liberty to Rome. At his appearance a new stream of vigour animated the citizens; they called him their friend and deliverer. The Brescian walked amongst them; his deportment was humble, his countenance emaciated, his address affable, and he spoke to them of moderation, of submission, of obedience. With the nobles and new senators he held another language; though to them also he was mild and diffident, speaking much of virtue and of respect for religion and the laws. But no sooner was he sensible of his own real influence, and saw the lengths to which the revolvers had already carried their designs, than he threw aside the mask, and appeared in his own character, daring, impetuous, self-sufficient, vain. He harangued the people; he talked of their forefathers the ancient Romans, who, by the wisdom of their senate and the valour of their armies, had conquered nations and subdued the earth. He dwelt on the names and the achievements of the Bruti, the Gracchi, and the Scipios; and of these men, said he, are you not the children? He advised, that the Capitol be instantly repaired; that the equestrian order be restored; that the people have their tribunes; that dignity attend the senate; and that the laws which had been silent and neglected, be revived in all their vigour. He spoke of the pope as of a deposed and banished tyrant: "But should you again be disposed (continued he) to admit him within these walls; first ~~fix~~ your own rights and determine

his. He is but your bishop: let him therefore have his spiritual jurisdiction. The government of Rome, its civil establishments, and its territories, belong to you. These you will keep if you have the spirit of men and the hearts of Romans." Fired by this harangue, the people, headed by the most disaffected of the nobles, publicly attacked the few cardinals and churchmen who remained in the city; they set fire to the palaces; and they compelled the citizens to swear obedience to the new government. Moderate men, who saw the folly of the attempt, were shocked at these excesses of popular phrenzy; but it was in vain to oppose the torrent: they submitted, looking forward with some curiosity, to the termination of an event which had begun in extravagance, and must end in disappointment.

Eugenius till now had viewed, with some concern, the wild derangement of his people: but when it seemed that their eyes opened to their own excesses, he could be inactive no longer. He excommunicated the ringleaders of the faction; and at the head of his troops, who were chiefly composed of Tiburtini, a people always hostile to the Romans, he marched against the enemy. His friends within the walls, who were numerous, co-operated with his designs, and in a few days overtures for peace were made to the pontiff. He acceded to them, but on condition that they should annul the arrangements they had made, and if they would have senators, that they should acknowledge all their power was from him. The people were satisfied, and they threw open the gates, through which Eugenius entered, among the acclamations of a fawning and inconstant multitude.—Before this event Arnold had retired; but he left behind him many friends strongly attached to his person and principles. Of himself we hear little more till the reign of Adrian our countryman; when, on account of fresh tumults, he and his adherents were excommunicated, and Rome was threatened with an interdict unless they expelled the whole party from their walls. This they did. The Arnolds retired with their champion into Tuscany, where he was received as a prophet and honoured as a saint. His enemies, however, prevailed; he was made prisoner, and conducted under a strong escort to Rome. In vain was great interest made to save his life; he was condemned and executed, and his ashes thrown into the Tiber, lest the people should collect his remains and venerate them as the relics of a sainted martyr.

"Such was Arnold of Brescia; a man (says Mr Berington *), whose character, whose principles, and whose views, we perhaps should be disposed to admire, had his life been recorded by unprejudiced historians, and not brought down to us drawn in the blackest colours which party, bigotted zeal, and enthusiasm, could lay on. He was rash, misjudging, and intemperate, or never would he have engaged in so unequal a contest.—The view of such a phenomenon in the 12th century excites a pleasing admiration. To attack the Roman pontiff and his clergy in the very centre of their power, required a more than common share of fortitude; to adopt a settled scheme of restoring to its pristine glory the republic of Rome, demanded a stretch of thought comprehensive and enterprising; and to forego the ease and indulgence of a dissipated age, for the reformation of manners and the suppression

Arnold.

* *Hist. of the Lives of Abelard and Heloise.*

Arnoldists
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Arnulph.

sion of what he thought usurped dominion, argued a character of mind disinterested, generous, and benevolent. But Arnold, like other reformers, went too far; and passion soon vitiated undertakings which were begun perhaps with motives the most laudable. The readiness with which the Roman people embraced this plan of lowering the jurisdiction of the pontiff, and restraining it within those bounds which the true spirit of Christianity had fixed, at once shows that they could reason justly, and that they considered the unbounded sway of the triple crown, to which reluctantly they submitted, as an assumed prerogative, to which violence or misconstruction, and not Christian right, had given efficacy."

ARNOLDISTS, in church-history, a sect so called from their leader Arnold of Brescia. See the preceding article.

ARNOLDUS (Gothofredus), pastor and inspector of the churches of Perleberg, and historiographer to the king of Prussia, was born at Annaburg in the mountains of Misnia in 1666. He was a zealous defender of Pietists, a sect among the German Protestants, and composed a great number of religious works; particularly on *Ecclesiastical History*, which exposed him to the resentment of the divines; and another giving an account of the doctrines and manners from the first ages, in which he frequently animadverts upon Cave's primitive Christianity. He died in 1714. Various are the opinions concerning Arnoldus in Germany; some of his own countrymen and profession extolling him to the skies as a saint of the last century, and setting an inestimable value upon his works; while others pronounce damnation upon him as an arch-heretic, and condemn his writings as heterodox.

ARNON (anc. geog.) a brook running between the borders of the Moabites and Ammonites on the other side Jordan (Moses, Joshua): Josephus calls it a river rising on the borders of Arabia, and at length falling into the Dead Sea. It is also called the river of Gad, as appears 2 Sam. xxv. 5. compared with 2 Kings x. 33.

ARNOT, in botany, the English name of the bunium. See BUNIUM.

ARNOTTO. The same with Anotta. See ANOTTA and BIXA.

ARNSTADE, a town of Germany, in Thuringia, on the river Gera. E. Long. 11. 3. N. Lat. 50. 54.

ARNULPH, or ERNULPH, bishop of Rochester in the reign of Henry I. He was born in France, where he was some time a monk of St Lucian de Beauvais. The monks led most irregular lives in this monastery; for which reason he resolved to quit it, but first took the advice of Lanfranc archbishop of Canterbury, under whom he had studied in the abbey of Becc, when Lanfranc was prior of that monastery. This prelate invited him over to England, and placed him in the monastery of Canterbury, where he lived a private monk till Lanfranc's death. When Anselm came to the archiepiscopal see, Arnulph was made prior of the monastery of Canterbury, and afterwards abbot of Peterborough. In 1115, he was consecrated Bishop of Rochester, which see he held nine years, and died in March 1124, aged 84.

Arnulph wrote, 1. A piece in Latin concerning the foundation, endowment, charters, laws, and other things

relating to the church of Rochester: it is generally known by the title of *Textus Roffensis*, and is preserved in the Archives of the cathedral church of Rochester. 2. An Epistle in Answer to some Questions of Lambert abbot of Munster; and, 3. An Epistle on incestuous Marriage.

ARNUS, now *Arno*, a very rapid river of Tuscany, which it divides, and in its course washes Florence and Pisa; rising in the Apennine, to the east of Florence, near a village called *S. Maria della Gratie*, on the borders of Romagna, 15 miles to the west of the sources of the Tiber; and then turning southward towards Arretium, it is there increased by the lakes of the Clanis; after which it runs westward, dividing Florence into two parts, and at length washing Pisa, falls eight miles below it into the Tuscan sea.

ARNWAY (John), a clergyman distinguished by his benevolence and loyalty to King Charles I. was descended from a very good family in the county of Salop, from which he inherited a considerable estate. He was educated at Oxford; and, having received holy orders, obtained the rectories of Hodnot and Ightfield, where he distinguished himself by his piety and exemplary charity: for it was his custom to clothe annually 12 poor people, and every Sunday to entertain as many at his table, not only plentifully, but with intimacy and respect. The civil war breaking out, he preached against rebellion, and raised and clothed eight troopers for the service of King Charles I. upon which his house was plundered by the parliament's army. He then went to Oxford to serve the king in person, which subjected him to a new train of misfortunes: for his estate was soon after sequestered, and himself imprisoned till the king's death; after which he went to the Hague, where he published, 1. The Tablet, or the Moderation of Charles I. the Martyr; and, 2. An Alarm to the Subjects of England. He at last went to Virginia, where he died in 1653.

AROBÉ. See ARROBAS.

AROLEO, an American weight, equal to 25 of our pounds.

AROMA PHILOSOPHORUM, denotes either saffron, or the aroph of Paracelsus; as *aroma germanicum* denotes elecampane. See AROPH.

AROMATA (anc. geog.) a town of Lydia, famous for its generous wines; and hence the appellation (Strabo.) Also the name of a trading town, and promontory of Ethiopia, at the termination of the Sinus Avalites of the Red Sea (Arrian.)

AROMATIC, an appellation given to such plants as yield a brisk fragrant smell, and a warm taste; as all kinds of spices, &c. See MATERIA MEDICA.

ARONA, a town of Italy, in the duchy of Milan, with a strong castle. It stands on the lake Maggoire. E. Long. 8. 25. N. Lat. 45. 41.

ARONCHES, a town of Portugal, in Alantejo, on the confines of Spain, seated on the river Caro. It is well fortified, and has about 500 inhabitants. W. Long. 5. 16. N. Lat. 14. 39.

AROOOL, a town of the empire of Russia, in the Ukrain, seated on the river Occa. E. Long. 38. 15. N. Lat. 51. 48.

AROPH, a contraction of *aroma philosophorum*; a name given to saffron.

AROPH Paracelsi, a name given to a kind of chemical

Arnus
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Aroph.

Arroph
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Arpinas.

cal flowers, probably of the same nature with the Ens Veneris, elegantly prepared by sublimation from equal quantities of lapis hæmatitis and sal ammoniac.

AROPH is also a term used frequently by Paracelsus in a sense synonymous with *lithontriptic*.

AROSBAY, a town of the East Indies, on the coast of the island of Madura, near Java. E. Long. 14. 30. N. Lat. 9. 30.

AROURA, a Grecian measure of 50 feet. It was more frequently used for a square measure of half the plethron. The Egyptian aroura was the square of 100 feet.

ARPAD (anc. geog.), is thought to have been a city of Syria. It was always placed with Hamath (2 Kings xviii. 34. xix. 13. Isai. x. 9. xxxvi. 19. xxxvii. 13. Jerem. xlix. 23.) Sennacherib boasts of having reduced Arpad and Hamath, or of having destroyed the gods of these two places. Hamath is known to be the same with Emefa; and it is thought that Arpad is the same with Arad or Arvad, as it is sometimes called in Hebrew. See ARAD.

ARPAGIUS, or HARPAGIUS, among the ancients, a person who died in the cradle, at least in early youth. The word is formed from the Greek *αρπαζω*, *I snatch*. The Romans made no funerals for their *arpagii*. They neither burnt their bodies, nor made tombs, monuments, or epitaphs for them; which occasioned Juvenal to say,

—Terra clauditur infans
Et minor igne rogi.

In after times it became the custom to burn such as had lived to the age of 40 days, and had cut any teeth; and these they called *αρπακτοι*, or *αρπαγμυνοι*, q. d. *rapti*, *ravished*. The usage seems to have been borrowed from the Greeks; among whom, Eustathius assures us, it was the custom never to bury their children either by night or full day, but at the first appearance of the morning; and that they did not call their departure by the name of *death*, but by a softer appellation, *Ημερας αρπαγης*, importing that they were ravished by Aurora, or taken away to her embraces.

ARPENT, signifies an acre or furlong of ground; and according to the old French account in domesday-book, 100 perches make an arpent. The most ordinary acre, called *Parpent de France*, is 100 perches square: but some account it but half an acre.

ARPHAXAD, the son of Shem and father of Salah. Arphaxad was born in the year of the world 1658, a year after the deluge, and died in the year of the world 2096, at the age of 438 years, (Genes. xi. 12, &c.)

ARPI. See ARGOS *Hippium*.

ARPINAS, or ARPINO, (Joseph Cæsar), a famous painter, born in the year 1560, at the castle of Arpinus, in the kingdom of Naples. He lived in great intimacy with Pope Clement VIII. who conferred upon him the honour of knighthood, and bestowed on him many other marks of his friendship. In the year 1600 he went to Paris with cardinal Aldobrandin, who was sent legate to the French court on the marriage of Henry IV. with Mary of Medicis. His Christian majesty gave Arpinas many considerable presents, and created him a knight of St Michael. The colouring of this painter is thought to be cold and inanimate; yet

there is spirit in his designs, and his compositions have somewhat of fire and elevation. The touches of his pencil being free and bold, give therefore pleasure to connoisseurs in painting: but they are generally incorrect. What he painted of the Roman history is the most esteemed of all his works. The French king has in his collection the following pieces of this master, viz. the nativity of our Saviour, Diana and Acteon, the rape of Europa, and a Susanna. He died at Rome in 1640.

ARPINUM, a town of the Volsci, a little to the east of the confluence of the rivers Liris and Fibrenus in the Terra di Lavoro; now decayed, and called *Arpino*. It was the native place of Cicero, and of C. Marius, (Sallust.)

ARQUA, a town of Italy, in the Padua, and territory of Venice, remarkable for the tomb of Petriarch. E. Long. 11. 43. N. Lat. 45. 43.

ARQUEBUS. See HARQUEBUS.

ARQUES, a town of Normandy, in France, seated on a small river of the same name. E. Long. 1. 30. N. Lat. 49. 54.

ARRACHEE, in heraldry, a term applied to the representations of plants torn up by the roots.

ARRACHIS, in botany. See ARACHIS.

ARRACK. See ARACK.

ARRAGON, a province of Spain, bounded on the north by the Pyrenæan mountains, which separate it from France; on the west by Navarre and the two Castiles; on the south, by Valencia; and on the east, by Catalonia. It is in length about 180 miles and in breadth 149; but the land is mountainous, dry, sandy or stony, badly cultivated, and worse peopled. However it does not want rivers: for besides the Ebro, which crosses it in the middle, there are the Xalo, the Cineca, the Galego, and the Arragon. The air is pure and wholesome; and there are mines of iron, and some say of gold. The most fertile parts are about the rivers: for there the land produces corn, wine, oil, flax, hemp, various fruits, and a small quantity of saffron, besides large flocks of sheep, and plenty of game in the woods.

The Arragonefe have the character of being bold, courageous, and well bred; but positive in their opinions, and bigotted in their religion. These were the first of the Spaniards that threw off the Moorish yoke. Saragossa is the capital of this province; and the other chief towns are Balbastro, Jaca, Sarazona, Haelca, Calatajud, Albarrazin, Trevel, Daroca, and Boria.

ARRAIGNMENT, in law, the arraigning or setting a thing in order, as a person is said to arraign a writ of novel disseisin, who prepares and fits it for trial.

ARRAIGNMENT is most properly used to call a person to answer in form of law upon an indictment, &c.

When brought to the bar, the criminal is called upon by name to hold up his hand; which though it may seem a trifling circumstance, yet is of this importance, that by the holding up of his hand *constat de persona*, and he owns himself to be of that name by which he is called. However it is not an indispensable ceremony; for, being calculated merely for the purpose of identifying the person, any other acknowledgment will answer the purpose as well: therefore, if the prisoner obstinately and contemptuously refuses to hold

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up his hand, but confesses he is the person named, it is fully sufficient.

Then the indictment is to be read to him distinctly in the English tongue (which was law, even while all other proceedings were in Latin), that he may fully understand his charge. After which it is to be demanded of him, whether he be guilty of the crime whereof he stands indicted, or not guilty?

When a criminal is arraigned he either stands mute, or confesses the fact, or else he pleads to the indictment.

1. If he says nothing, the court ought *ex officio* to impanel a jury to enquire whether he stands obstinately mute, or whether he be dumb *ex visitatione Dei*. If the latter appears to be the case, the judges of the court (who are to be of counsel for the prisoner, and to see that he hath law and justice) shall proceed to the trial, and examine all points as if he had pleaded not guilty. But whether judgment of death can be given against such a prisoner, who hath never pleaded, and can say nothing in arrest of judgment, is a point yet undetermined.

If he be found to be obstinately mute (which a prisoner hath been held to be that hath cut his own tongue), then, if it be on an indictment of high treason, it hath long been clearly settled, that standing mute is equivalent to a conviction, and he shall receive the same judgment and execution.

The English judgment of penance for standing mute was as follows: That the prisoner be remanded to the prison from whence he came, and put into a low dark chamber; and there be laid on his back, on the bare floor, naked, unless where decency forbids; that there be placed upon his body as great a weight of iron as he could bear, and more; that he have no sustenance, save only, on the first day, three morsels of the worst bread; and, on the second day, three draughts of standing water that should be nearest to the prison-door; and in this situation this should be alternately his daily diet *till he died*, or, as anciently the judgment ran, *till he answered*.

It hath been doubted whether this punishment subsisted at the common law, or was introduced in consequence of the statute Westm. 1. 3. Edw. I. c. 12. which seems to be the better opinion. For not a word of it is mentioned in Glanvil or Bracton, or in any ancient author, case, or record (that hath yet been produced), previous to the reign of Edward I.: but there are instances on record in the reign of Henry III. where persons accused of felony, and standing mute, were tried in a particular manner, by two successive juries, and convicted; and it is asserted by the judges in 8 Henry IV. that, by the common law before the statute, standing mute on an appeal amounted to a conviction of the felony. This statute of Edward I. directs such persons, "as will not put themselves upon inquests of felonies before the judges at the suit of the king, to be put into hard and strong prison (*soient mys en la prison fort et dure*), as those which refuse to be at the common law of the land." And, immediately after this statute, the form of the judgment appears in Fleta and Britton to have been only a very strait confinement in prison, with hardly any degree of sustenance; but no weight is directed to be laid upon the body, so as to hasten the death of the miserable

sufferer: and indeed any surcharge of punishment on persons adjudged to penance, so as to shorten their lives, is reckoned by Horne in the Mirror as a species of criminal homicide. It also clearly appears, by a record of 31 Edw. III. that the prisoner might then possibly subsist for 40 days under this lingering punishment. It is therefore imagined that the practice of loading him with weights, or, as it is usually called, *pressing him to death*, was gradually introduced between 31 Edward III. and 8 Henry IV. at which last period it first appears upon the books; being intended as a species of mercy to the delinquent, by delivering him the sooner from his torment: and hence it is also probable, that the duration of the penance was then first altered; and instead of continuing *till he answered*, it was directly to continue *till he died*, which must very soon happen under an enormous pressure.

The uncertainty of its original, the doubts that were conceived of its legality, and the repugnance of its theory (for it rarely was carried into practice) to the humanity of the laws of England, all concurred to require a legislative abolition of this cruel process, and a restitution of the ancient common law; whereby the standing mute in felony, as well as in treason and in trespass, amounted to a confession of the charge.

2. If the prisoner made a simple and plain confession, the court hath nothing to do but to award judgment: but it is usually very backward in receiving and recording such confession, out of tenderness to the life of the subject; and will generally advise the prisoner to retract it, and,

3. Plead to the indictment; as to which, see the article *PLEA of Indictment*.

ARRAN, an island of Scotland, in the Frith of Clyde, between Kintyre and Cunningham. Of this island the best description we have is that given by Mr Pennant, in his Tour through Scotland, Vol. II. 172—184.

"Arran, or properly *Arr-inn*, or 'the island of mountains,' seems not to have been noticed by the ancients, notwithstanding it must have been known to the Romans, whose navy, from the time of Agricola, had its station in the *Glota Æstuarium*, or the Frith of Clyde. Cambden indeed makes this island the *Glota* of Antonine, but no such name occurs in his itinerary: it therefore was bestowed on Arran by some of his commentators. By the immense cairns, the vast monumental stones, and many relics of Druidism, this island must have been considerable in very ancient times. Here are still traditions of the hero Fingal, or Fin-mac-coil, who is supposed here to have enjoyed the pleasures of the chase; and many places retain his name: but I can discover nothing but oral history that relates to the island till the time of Magnus the Barefooted, the Norwegian victor, who probably included Arran in his conquests of Kintyre. If he did not conquer that island, it was certainly included among those that Donald Bane was to cede; for it appears that Acho, one of the successors of Magnus, in 1263, laid claim to Arran, Bute, and the Cumrays, in consequence of that promise: the two first he subdued, but the defeat he met with at Largs soon obliged him to give up his conquests. Arran was the property of the crown. Robert Bruce retired thither during his distresses, and met with protection from his faithful vassals. Numbers of them followed

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lowed his fortunes; and after the battle of Bannockburn he rewarded several, such as the Mac-cooks, Mac-kinnons, Mac-brides, and Mac-louis, or Fullertons, with different charters of lands in their native country. All these are now absorbed by this great family, except the Fullertons, and a Stewart, descended from a son of Robert III. who gave him a settlement here. In the time of the Dean of the Isles, his descendant possessed Castle Douan; and *he and his bluid*, says the Dean, *are the best men in that countrey*. About the year 1334, this island appears to have formed part of the estate of Robert Stewart, great steward of Scotland, afterwards Robert II. At that time they took arms to support the cause of their master; who afterwards, in reward, not only granted at their request an immunity from their annual tribute of corn, but added several new privileges, and a donative to all the inhabitants that were present. In 1456, the whole island was ravaged by Donald Earl of Ross and Lord of the Isles. At that period, it was still the property of James II.; but in the reign of his successor James III. when that monarch matched his sister to Thomas Lord Boyd, he created him Earl of Arran, and gave him the island as a portion. Soon after on the disgrace of that family, he caused the Countess to be divorced from her unfortunate husband; and bestowed both the lady and island on Sir James Hamilton, in whose family it continues to this time, a very few farms excepted.

"Arran is of great extent, being 23 miles from Sgreadan point north to Beinnean south; and the number of inhabitants are about 7000, who chiefly inhabit the coasts; the far greater part of the country being uninhabited by reason of the vast and barren mountains. Here are only two parishes, Kilbride and Kill-more; with a sort of chapel of ease to each, founded in the last century, in the golden age of this island, when it was blessed with Anne Dutcheffs of Hamilton, whose amiable disposition and humane attention to the welfare of Arran render at this distant time her memory dear to every inhabitant. The principal mountains of Arran are, Goatfield, or Gaoilbheinn, or "the mountain of the winds," of a height equal to most of the Scottish Alps, composed of immense piles of moorstone, in form of wool-packs, clothed only with lichens and mosses, inhabited by eagles and ptarmigans; Beinharrin, or "the sharp pointed;" Ceum-na-Caillich, "the step of the carline or old hag;" and Grianan-Athol, that yields to none in ruggedness. The lakes are Loch-jorfa, where salmon come to spawn; Loch-tana; Loch-na-jura, on the top of an high hill; Loch-mhachrai; and Loch-knoc-a-charbei, full of large eels. The chief rivers are, Abhan-mhor, Moina-mhor, Slon-drai-machrei, and Jorfa; the two last remarkable for the abundance of salmon.

"The quadrupeds are very few; only otters, wildcats, shrew-mice, rabbits, and bats; the stags, which used to abound, are now reduced to about a dozen. The birds are, eagles, hooded-crows, wild pigeons, staves, black game, grouse, ptarmigans, daws, green plovers, and curlews. It may be remarked, that the partridge at present inhabits this island, a proof of the advancement of agriculture.

"The climate is very severe; for besides the violence of wind, the cold is very rigorous; and snow lay here in the valleys for 13 weeks of the last winter. In sum-

mer, the air is remarkably salubrious; and many invalids resort here on that account, and to drink the whey of goats milk.

"The principal disease here is the pleurisy; small-pox, measles, and chincough, visit the island once in seven or eight years. The practice of bleeding twice every year seems to have been intended as a preventative against the pleurisy: but it is now performed with the utmost regularity at spring and fall. The duke of Hamilton keeps a surgeon in pay; who at those seasons makes a tour of the island. On notice of his approach, the inhabitants of each farm assemble in the open air; extend their arms; and are bled into a hole made in the ground, the common receptacle of the vital fluid. In burning fevers, a tea of *wood sorrel* is used with success, to allay the heat. An infusion of *ransoms*, or *allium ursinum*, in brandy, is esteemed here a good remedy for the gravel.

"The men are strong, tall, and well made; all speak the Erse language, but the ancient habit is entirely laid aside. Their diet is chiefly potatoes and meal; and during winter, some dried mutton or goat is added to their hard fare. A deep dejection appears in general through the countenances of all: no time can be spared for amusement of any kind; the whole being given for procuring the means of paying their rent, of laying in their fuel, or getting a scanty pittance of meat and clothing.

"The leases of farms are 19 years. The succeeding tenants generally find the ground little better than a *caput mortuum*; and for this reason; Should they at the expiration of the lease leave the lands in a good state, some avaritious neighbours would have the preference in the next setting, by offering a price more than the person who had expended part of his substance in enriching the farm could possibly do. This induces them to leave it in the original state. The method of setting a farm is very singular; each is commonly possessed by a number of small tenants; thus a farm of 40 l. a-year is occupied by 18 different people, who by their leases are bound, conjunctly and severally, for the payment of the rent to the proprietor. These live in the farm in houses clustered together, so that each farm appears like a little village. The tenants annually divide the arable land by lot; each has his ridge of land, to which he puts his mark, such as he would do to any writing: and this species of farm is called *run-rig*, (*i. e.*) ridge. They join in ploughing; every one keeps a horse or more; and the number of those animals consume so much corn, as often to occasion a scarcity; the corn and pease raised being (much of it) designed for their subsistence, and that of the cattle, during the long winter. The pasture and moor-land annexed to the farm is common to all the possessors. All the farms are open. Inclosures of any form, except in two or three places, are quite unknown: so that there must be a great loss of time in preserving their corn, &c. from trespass. The usual manure is sea plants, coral and shells. The run-rig farms are now discouraged: but since the tenements are set by roup or auction, and advanced by an unnatural force to above double the old rent, without any allowance for enclosing, any example set in agriculture, any scarcity of tenure by lengthening the leases, affairs will turn retrograde, and the farms relapse into their old state of rudeness; migration

Arran.

Arrange-
ment.

migration will increase (for it has begun), and the rents be reduced even below their former value: the late rents were scarce 1200 l. a year; the expected rents 3000 l.

"The produce of the island is oats; of which about 5000 bolls, each equal to nine Winchester bushels, are sown; 500 of beans, a few pease, and above 1000 bolls of potatoes, are annually set: notwithstanding this, 500 bolls of oat-meal are annually imported, to subsist the natives.

"The live stock of the island is 3183 milch-cows; 2000 cattle, from one to three years old; 1058 horses; 1500 sheep; and 500 goats: many of the two last are killed at Michaelmas and dried for winter-provision, or sold at Greenock. The cattle are sold from 40 to 50 s. per head, which brings into the island about 1200 l. per annum: I think that the sale of horses also brings in about 300 l. Hogs were introduced here only two years ago. The herring-fishery round the island brings in 300 l. the sale of herring-nets 100 l. and that of thread about 300 l. for a good deal of flax is sown here. These are the exports of the island; but the money that goes out for mere necessaries is a melancholy drawback.

"The women manufacture the wool for the cloathing of their families; they set the potatoes, and dress and spin the flax. They make butter for exportation, and cheese for their own use.

"The inhabitants in general are sober, religious, and industrious: great part of the summer is employed in getting peat for fuel, the only kind in use here; or in building or repairing their houses, for the badness of the materials requires annual repairs: before and after harvest, they are busied in the herring-fishery; and during winter the men make their herring-nets: while the women are employed in spinning their linen and woollen yarn. The light they often use is that of lamps. From the beginning of February to the end of May, if the weather permits, they are engaged in labouring their ground: in autumn they burn a great quantity of fern, to make kelp. So that, excepting at new-year's day, at marriages, or at the two or three fairs in that island, they have no leisure for any amusements: no wonder then at their depression of spirits.

"Arran forms part of the county of Bute, and is subject to the same sort of government: but, besides, justice is administered at the baron's baily court, who has power to fine as high as 20 s.; can decide in matters of property not exceeding 40 s.; can imprison for a month; and put delinquents into the stocks for three hours, but that only during day-time.

In this island there are many of those rude antiquities or monuments called *cairns*, *druidical circles*, &c. See CAIRNS.

ARRANGEMENT, or RANGEMENT, the disposition of the parts of a whole, in a certain order.

The modern philosophy shows us, that the diversity of the colours of bodies depends entirely on the situation and arrangement of the parts, which reflect the light differently; the diversity of tastes and smells on the different arrangements of the pores, which render them differently sensible; and the general diversity of bodies on the different arrangement of their parts. The happy arrangement of words makes one of the greatest beauties of discourse.

Arras
||
Arrears.

ARRAS, the capital city of Artois, a province in the French Netherlands. It is seated on a mountain; and the parts about it are full of quarries, where they get stone for building. It is divided into two parts, the town and the city. The abbe of St Vaast is lord of the town, and the bishop of Arras of the city, which is the least part. They are divided by a strong wall, a large fosse, and the little river Chrinchron, which 100 paces below falls into the Scarp. They are both well fortified, inclosed by high ramparts, and by double deep fosses, which in several places are cut out of the rock. It has four gates; and since the French are become masters of it, has a strong citadel with five bastions. The most remarkable places are, the great square where the principal market is kept; this is full of fine buildings, with piazzas all round it like those of Covent-garden. Not far from this is the lesser market, which contains the town-house, a very noble structure, with a high tower covered with a crown, on the top of which is a brazen lion which serves for a vane. In the midst of this market is the chapel of the Holy Candle, which the papists pretend was brought by the Virgin Mary herself above 600 years ago, when the city was afflicted with divers diseases, and every one that touched the candle was cured; it is kept in a silver shrine. This chapel has a spire steeple, adorned with several statues. The cathedral church of Notre-Dame stands in the city: it is a very large Gothic building, extremely well adorned; the tower is very high, and has a fine clock embellished with little figures in bronze, which represent the passion of Jesus Christ; they pass before the bell to strike the hours and half-hours. In this church there is a silver shrine, enriched with pearls and diamonds, which contains a sort of wool, which they call *manna*; that they say fell from heaven in the time of a great drought, almost 1400 years ago: they carry it very solemnly in procession when they want rain. The abbey-church of St Vedast is the greatest ornament of Arras, it being adorned with a fine steeple, and seats for the monks of admirable workmanship; the pulpit is of brass, fashioned like a tree, supported by two bears of the same metal sitting on their hind legs; there are little bears in different postures coming to climb up the tree. The chimes are remarkable for the different tunes which they play. There are 11 parish churches, and a great many convents of men and women. It is from this city that the tapestry called *arras hangings* takes its denomination. E. Long. 2. 56. N. Lat. 50. 17.

ARRAS, or *Araxes*, is also the name of a river of Georgia, which discharges itself into the Caspian sea.

ARRAY, in law, the ranking or setting forth of a jury, or inquest of men impanelled on a cause.

Battle-ARRAY, the order or disposition of an army, drawn up with a view to engage the enemy. See ARMY.

ARRAYERS, or ARRAGERS, ARRAITORES, is used in some ancient statutes, for such officers as had care of the soldiers armour, and saw them duly accounted in their kinds. In some reigns, commissioners have been appointed for this purpose. Such were the commissioners of array appointed by king Charles I. in the year 1642.

ARREARS, the remainder of a sum due, or money remaining in the hands of an accountant. It likewise signifies

Arrenta-
tion,
Arrest.

signifies the money due for rent, wages, &c. or what remains unpaid of pensions, taxes, &c.

ARRENTATION, in the forest laws, implies the licensing the owner of lands in a forest to inclose them with a low hedge and a small ditch, in consideration of a yearly rent.

ARREST, in English law (from the French word *arrester*, to stop or stay), is the restraint of a man's person, obliging him to be obedient to the law; and is defined to be the execution of the command of some court of record or office of justice. An arrest is the beginning of imprisonment; where a man is first taken, and restrained of his liberty by power or colour of a lawful warrant.

Arrests are either in *civil* or *criminal* cases.

1. An arrest in a *civil* cause is defined to be the apprehending or restraining one's person by process in execution of the command of some court.

An arrest must be by corporal seizing or touching the defender's body; after which the bailiff may justify breaking open the house in which he is, to take him: otherwise he has no such power; but must watch his opportunity to arrest him. For every man's house is looked upon by the law to be his castle of defence and asylum, wherein he should suffer no violence. Which principle is carried so far in the civil law, that, for the most part, not so much as a common citation or summons, much less an arrest, can be executed upon a man within his own walls. Peers of the realm, members of parliament, and corporations, are privileged from arrests; and of course from outlawries. And against them the process to enforce an appearance must be by summons and distress *infinite*, instead of a *capias*. Also clerks, attorneys, and all other persons attending the courts of justice (for attorneys being officers of the court, are always supposed to be there attending), are not liable to be arrested by the ordinary process of the court, but must be sued by bill (called usually a *bill of privilege*), as being personally present in court. Clergymen performing divine service, and not merely staying in the church with a fraudulent design, are for the time privileged from arrests, by statute 50 Edw. III. c. 5. and 1. Rich. II. c. 16.; as likewise members of convocation actually attending thereon, by statute 8. Hen. VI. c. 1. Suitors, witnesses, and other persons, necessarily attending any courts of record upon business, are not to be arrested during their actual attendance, which includes the necessary coming and returning. Seamen in the king's service are privileged from arrests for debts under L. 20. (1 Geo. II. c. 14. and 14 Geo. II. c. 38.); and soldiers or marines are not liable to arrests for a debt of less than L. 10. (30 Geo. II. c. 6, 11.) And no arrest can be made in the king's presence, nor within the verge of his royal palace, nor in any place where the king's justices are actually sitting. The king hath moreover a special prerogative (which indeed is very seldom exerted), that he may by his *writ of protection* privilege a defendant from all personal, and many real suits, for one year at a time, and no longer; in respect of his being engaged in his service out of the realm. And the king also by the common law might take his creditor into his protection, so that no one might sue or arrest him till the king's debt was paid: but by the statute 25 Edw. III. c. 19. notwithstanding such protection, another credi-

tor may proceed to judgment against him, with a stay of execution, till the king's debt be paid; unless such creditor will undertake for the king's debt, and then he shall have execution for both. And, lastly, by statute 29. Car. II. c. 7. no arrest can be made, nor process served, upon a Sunday, except for treason, felony, or breach of the peace.

2. An arrest in a *criminal* cause is the apprehending or restraining one's person, in order to be forthcoming to answer an alleged crime. To this arrest all persons whatsoever are, without distinction, equally liable; and doors may be broken open to arrest the offender: but no man is to be arrested, unless charged with such a crime as will at least justify holding him to bail when taken. There is this difference also between arrests in civil and criminal cases, that none shall be arrested for debt, trespass, or other cause of action, but by virtue of a precept or commandment out of some court; but for treason, felony, or breach of the peace, any man may arrest with or without warrant or precept. But the king cannot command any one by word of mouth to be arrested; for he must do it by writ, or order of his courts, according to law: nor may the king arrest any man for suspicion of treason, or felony, as his subjects may; because, if he doth wrong, the party cannot have an action against him.

Arrests by private persons are in some cases commanded. Persons present at the committing of a felony must use their endeavours to apprehend the offender, under penalty of fine and imprisonment; and they are also, with the utmost diligence, to pursue and endeavour to take all those who shall be guilty thereof out of their view, upon a hue and cry levied against them. By the vagrant act 17 Geo. II. c. 5. every person may apprehend beggars and vagrants; and every private person is bound to assist an officer requiring him to apprehend a felon.

In some cases likewise arrests by private persons are rewarded by law. By the 4 and 5 William and Mary, c. 8. persons apprehending highwaymen, and prosecuting them to a conviction, are entitled to a reward of L. 40, and if they are killed in the attempt, their executors, &c. are entitled to the like reward. By the 6 and 7 William III. c. 17. persons apprehending counterfeiters and clippers of the coin, and prosecuting them to conviction, are entitled to L. 40.

By 5 Ann, c. 31. persons who shall take any one guilty of burglary, or the felonious breaking and entering any house in the day-time, and prosecute them to conviction, shall receive the sum of L. 40 within one month after such conviction.

With regard to arrests by public officers, as watchmen, constables, &c. they are either made by their own authority, which differs but very little from the power of a private person; or they are made by a warrant from a justice of peace. See WARRANT.

ARREST of Judgment, in law, the assigning just reason why judgment should not pass: as, Want of notice of the trial; a material defect in the pleading; when the record differs from the deed impleaded; when persons are misnamed; where more is given by the verdict than is laid in the declaration, &c. This may be done either in criminal or civil cases.

ARRESTMENT, in Scots law, signifies the securing of a criminal till trial, or till he find caution to stand

Arrest,
Arrest-
ment.

Arresto

Arrobas.

stand trial, in what are called *bailable crimes*. In civil cases, it signifies either the detaining of strangers, or natives in *meditatione fugæ*, till they find caution *judicio fisci*, or the attaching the effects of a stranger in order to found jurisdiction. But, in the most general acceptation of the word, it denotes that diligence by which a creditor detains the goods or effects of his debtor in the hands of third parties till the debt due to him be either paid or secured. See Law, Part III. N° clxxviii.

ARRESTO FACTO SUPER BONIS, &c. a writ brought by a denizen against the goods of aliens found within this kingdom, as a recompence for goods taken from him in a foreign country.

ARRESTS, in farriery, mangy tumours upon a horse's hinder-legs, between the ham and the pastern.

ARRETIVM, (Cicero Cæsar); *Arrhetium*, (Ptolemy); *Urbs Arrhetinorum*, (Polybius;) one of the twelve ancient towns of Tuscany, near the Arnis and Clanis, situated in a pleasant valley. Now *Arezzo*, 42 miles east of Florence. E. Long. 13. 18. Lat. 43. 15.

ARRHABONARII, a sect of Christians, who held that the eucharist is neither the real flesh or blood of Christ, nor yet the sign of them; but only the pledge or earnest thereof.

ARRHEPHORIA, a feast among the Athenians, instituted in honour of Minerva, and Herse daughter of Cecrops. The word is composed of *αἰετός* *myster*, and *ῥέω*, *I carry*; on account of certain mysterious things which were carried in procession at this solemnity.—Boys, or, as some say, girls, between seven and twelve years of age, were the ministers that assisted at this feast, and were denominated *αἰετοπόροι*. This feast was also called *Hersephoria*, from the daughter of Cecrops, already mentioned.

ARRIAN, a famous philosopher and historian under the emperor Hadrian and the two Antonines, was born at Nicomedia in Bithynia. His great learning and eloquence procured him the title of *The second Xenophon*; and raised him to the most considerable dignities at Rome, even the consulship itself. We have four books of his *Dissertations upon Epictetus*, whose scholar he had been; and his *History of Alexander the Great*, in seven books, is greatly admired by the best judges.

ARRIERE, the hinder or posterior part of any thing.

ARRIERE Bon, in the French customs, is a general proclamation, whereby the king summonses to the war all that hold of him, both his vassals, i. e. the noblesse, and the vassals of his vassals.

ARRIERE Fee, or *Fief*, is a fee dependent on a superior one. These fees commenced, when the dukes and counts, rendering their governments hereditary in their families, distributed to their officers parts of the royal domains which they found in their respective provinces, and even permitted those officers to gratify the soldiers under them in the same manner.

ARROBAS, or AROBAS, a weight used in Spain, Portugal, and the foreign dominions of both. The Arrobas of Portugal is also called *Arata*, and contains thirty-two Lisbon pounds; that of Spain contains

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twenty-five Spanish pounds. In Peru it is called *Arroue*.

ARROE, a small island of Denmark, in the Baltic Sea, a little south of the island of Funen. It is eight miles in length, and about two in breadth; and produces corn, anniseed, black cattle and horses. It has three parishes, the most considerable of which is Koping. It stands at the south side of the island, in the bottom of a bay, and has a port with some trade. E. Long. 9. 40. N. Lat. 55. 20.

ARROJO, DE ST SERVAN, a town of Spain, in Estramadura. W. Long. 5. 20. N. Lat. 38. 40.

ARRONDEE, in heraldry, a cross, the arms of which are composed of sections of a circle, not opposite to each other, so as to make the arms bulge out thicker in one part than another; but the sections of each arm lying the same way, so that the arm is every where of an equal thickness, and all of them terminating at the edge of the escutcheon like the plain cross.

ARROW, a missile weapon of offence, slender, pointed, and barbed, to be cast or shot with a bow. See ARCHERY.

ARROW-Makers are called *fletchers*; and were formerly, as well as bowyers, persons of great consequence in the commonwealth.

Arrow-heads and quarrels were to be well boched or brased, and hardened at the points with steel; the doing of which seems to have been the business of the arrow-smith.

ARROW-Head, in botany. See SAGITTARIA.

ARROW-Root. See MARANTA.

ARSACES, otherwise MITHRIDATES, a king of the Parthians, spoken of in the first book of Macabees, xiv. 2. He considerably enlarged the kingdom of Parthia by his good conduct and valour. See PARTHIA.

ARSCHIN, in commerce, a long measure used in China to measure stuffs. Four arschins made three yards of London.

ARSENAL, a royal or public magazine, or place appointed for the making and keeping of arms, necessary either for defence or assault. Some derive this word from *ars* a *fortress*; others from *arts*, denoting a *machine*; others again from *ars* and *senatus*, because this was the defence of the senate: but the more probable opinion derives it from the Arabic *dar-senaa*, which signifies *arsenal*.

The arsenal of Venice is the place where the galleys are built and laid up. The arsenal of Paris is that where the cannon or great guns are cast. It has this inscription over the gate.

*Ætna hæc Henrico vulcania tela ministrat,
Tela Giganteos debellatura furores.*

There are arsenals, or store-houses, appropriated to naval furniture and equipments. At Marseilles is the arsenal for the galleys; and at Toulon, Rochfort, and Brest, are those for the men for war.

ARSENIC, in mineralogy and chemistry, an heavy opaque substance, usually sold in white masses, which, when broken, discover a semi-transparency somewhat resembling that of sal ammoniac, but by exposure to the air become white and opaque like the outside of the original mass. By various chemical processes it may

Y y

bc

Arroa

Arsenic.

Arsenic. be made to assume the appearance either of an acid salt or metal, at the pleasure of the operator; and therefore has been considered both as a saline substance and as a semi-metal. It is not known at what time this mineral was discovered; though, as it abounds in many different kinds of ores, it is probable that the pernicious properties it manifests would very soon make it be taken notice of by metallurgists. Aristotle makes mention of a substance called *Σανσάραγγ*; and his disciple Theophrastus makes mention of one name *Αρσενικός*, which by Dioscorides and others was called *Αρσενικός* about the beginning of the Christian æra. By this, however, it appears, that they only meant the substances now called *sandarach* and *orpiment*; and Avicenna, who lived in the 11th century, is the first who expressly mentions white arsenic, as well as its sublimate. It is not known by whom arsenic was first reduced to a metallic form. Paracelsus asserts that arsenic, sublimed with egg-shell lime, becomes like silver; and, in 1675, M. Lemeris makes mention of a method of subliming arsenic with fixed alkali and soap.

Is not mentioned till the time of Avicenna.

Composed of an acid and phlogiston.

Is not to be considered as a substance by which other metals are mineralized.

Sulphur the chief mineralizer of metals.

The true nature of arsenic being thus so little known, it is no wonder to find chemists differing very much as to the class of natural bodies in which it ought to be placed. Avicenna and a great number of others class it with the sulphurs; Albertus Magnus and his followers, among the salts. Becher considers it as a kind of soap, or saline sulphureous body. Later experiments, however, have made it evident, that white arsenic consists of an acid united to phlogiston; and that by diminishing the latter, the acid becomes more and more apparent; while, on the contrary, by augmenting the quantity of phlogistic matter, the arsenic assumes the metallic form. With respect to the sulphureous nature of arsenic, it appears, indeed, that the regulus itself, as well as orpiment and realgar, are inflammable substances; but it is not so with white arsenic. This inflammability, therefore, which arsenic in a certain state has in common with zinc and several other substances, will not denominate it sulphureous, any more than those of other bodies which possess the common property of inflammability can be denominated *sulphurs*.

It is commonly said, that arsenic mineralizes metals; and therefore, says Mr Bergman, it is considered as a sulphur by some, who yet extend the idea of mineralization so far, as under it to comprehend all mixtures of which metals make a part. But if we examine this signification a little more accurately, we shall see that it is extended too far; for if this be admitted, we must at the same time allow, that no native metal is to be found. Thus the gold called *native*, is seldom if ever found pure, but more or less mixed with copper or silver; and so with other metals. If, therefore, arsenic, which, unless in its reguline state, never dissolves other metals, be considered as a mineralizing substance, what hinders us from saying that gold is mineralized by silver or copper, and in general every metal mineralized by some other? It is much more natural to suppose that those metals are mineralized which are actually dissolved and concealed by a menstruum. Sulphur is the chief agent employed by nature for this purpose; and though the acids of vitriol, phosphorus, nitre, and sometimes even the aerial acid, occasion the metals to put on an appearance foreign to their nature, yet the

number of these is so small, that compared with the sulphurated minerals, they almost vanish.

This mineral, so troublesome to the mineralogist, occasioned the alchemists to suspect the existence of a certain arsenical principle indispensably necessary to the perfection of every metal. Even as late as 1773 a question to this purpose was proposed by the Royal Academy of Sciences at Berlin: the prize was adjudged to M. Monnet, who in his answer considered arsenic as a semi-metal of a peculiar kind, which is so far from constituting any essential part of metals, that its presence is always attended with inconveniences, either by carrying off the metal as it flies away, or spoiling the mass in which it remains. These considerations, however, do not hinder us from asserting that the acid of arsenic, like others, is a mineralizing substance, if at any time it happens to meet with metals in the bowels of the earth, and to unite with it in that form.

Arsenic in its pure state is well known to be a most destructive and deadly poison, for which the art of medicine has scarcely as yet afforded a cure. Mr Bergman is of opinion that it acts as an highly corrosive acid, even when applied externally. He also tells us, that the dry acid is more destructive than white arsenic; the regulus and realgar less so. From an experiment of Mr Scheele, however, in which eight grains of arsenical acid were given to a cat, it does not appear that it acts more violently than white arsenic. The extreme danger attending this substance when taken into the human body, arises from its insolubility, and the difficulty of decomposing it; for there can but little danger arise from a liquid, unless like corrosive acids, it should at once burn the substance of the stomach like fire; or, like laurel water suspend the action of the nervous system. Corrosive sublimate, solutions of mercury in aquafortis, &c. will as certainly poison as arsenic; but they are much less difficult to cure, because any alkaline substance will certainly decompose them and destroy their deleterious efficacy. Arsenic, on the contrary, cannot be decomposed, nor united with any known substance, at least in such a short time as the exigence of the case we speak of would require, without a considerable degree of heat. It therefore remains in the stomach, continually exerting its mischievous qualities, unless it can be discharged by vomiting.

The symptoms attending arsenic when swallowed are, nausea, sickness, and retching to vomit, about half an hour after it is taken. These are followed by violent vomitings, hiccups, and pains in the stomach and bowels. Convulsions and palsies of the limbs presently succeed, with intense heats, cold sweats, palpitations of the heart, extreme anxiety, prostration of strength, thirst and dryness of the mouth and throat, loss of reason, and at last death. If the quantity taken was considerable, the patient dies in seven or eight hours after taking it; and the stomach and intestines are found, upon dissection, to be corroded and perforated. When this is not the case, violent putrefactive symptoms soon ensue after arsenic is swallowed; for the bodies of those who are poisoned by it generally have abundance of red or purple spots even before death. It remarkably inflames the coats of the stomach, and the putrefaction

Arsenic. An arsenical principle indispensably necessary to the perfection of every metal. Even as late as 1773 a question to this purpose was proposed by the Royal Academy of Sciences at Berlin: the prize was adjudged to M. Monnet, who in his answer considered arsenic as a semi-metal of a peculiar kind, which is so far from constituting any essential part of metals, that its presence is always attended with inconveniences, either by carrying off the metal as it flies away, or spoiling the mass in which it remains. These considerations, however, do not hinder us from asserting that the acid of arsenic, like others, is a mineralizing substance, if at any time it happens to meet with metals in the bowels of the earth, and to unite with it in that form.

Acid of arsenic a mineralizing substance.

Poisonous qualities of arsenic and its acid.

Why it is more dangerous than others.

Symptoms attending the swallowing of arsenic.

Arsenic.

faction is said particularly to take place in the genitals of men. Mr Bergman relates, that in the body of a man who was poisoned with arsenic and dissected in the anatomical theatre at Upsal, the putrefaction had been so strong that the mineral was deprived of part of its phlogiston and emitted the garlic smell, that peculiar characteristic of arsenic when in this situation.

10
Antidotes
ineffectual-
ly proposed.

Many antidotes have been proposed against this dreadful poison by authors of the highest reputation; but it is to be feared without that success which the confidence of those who proposed them seemed to ensure. Indeed, previous to any great hope of success in this respect, it ought to be shown that these antidotes are able to effect some considerable change on arsenic when out of the body; and that not in solution, but when in a powder not very fine, as is the case with arsenic when it is usually taken. Mr Bergman recommends alkalies in diseases occasioned by arsenic: Nay he tells us, that "since phlogiston and alkalies are the most powerful correctors of acid acrimony, it will readily occur, how it may be mitigated, and its deleterious effects obviated." But the many fatal accidents consequent on taking this mineral, show that none of those are to be depended upon. Bergman himself indeed cautions us against trusting to phlogiston correctors alone; and perhaps the solution of hepar sulphuris, which contains the united powers of both the alkaline and phlogistic antidotes united, might prove more efficacious than either of them singly. Oils, fats, milk, warm fat broths, fresh butter, &c. have all been recommended; and, no doubt, in such deplorable cases, are those remedies to which we can most readily have recourse: but even here it is evident, that their efficacy must be exceedingly dubious, whatever their intrinsic virtues may be; and for this plain reason, that the arsenic is already in contact with the stomach, and tho' the remedies might have prevented its action had they been first swallowed, their operation must be much less powerful after the poison has had access to the stomach and begun to exert its pernicious effects.

11
Arsenic recommended as a medicine both internally and externally.

Notwithstanding these dreadful effects of arsenic when taken in large quantity, attempts have not been wanting to introduce it into the materia medica. The disease indeed in which they have been recommended (the cancer) is of a very incurable nature, at least by ordinary medicines. M. le Febure, a French physician, some time ago published a treatise, in which he recommended pure white arsenic as a specific in that distemper. The dose was four French grains, equal to $3\frac{1}{2}$ English, dissolved in a French pint (32 tröy ounces) of distilled water. A table spoonful of this solution is to be taken with an equal quantity of milk, and half an ounce of syrup of poppies, every morning fasting, and taking care to taste nothing for an hour after. This course must be continued eight days; after which a dose is to be taken twice every day in the same manner, one in the morning and another about eight at night. At the end of a fortnight three doses may be exhibited daily, the third being taken at mid-day. Thus people of a weakly constitution may continue till the cure is completed; but such as are more robust may gradually augment the dose till two table-spoonfuls are taken at each time with as much milk, and half an ounce of syrup of poppies. Children

must on no account take more than three tea-spoonfuls a-day, with a proportional quantity of syrup of poppies. For adults, the strength of the solution, as well as the quantity, is to be augmented; six grains being put into the second bottle and eight into the third; and a purgative, composed of manna, rhubarb, and sal seignette, is to be given every eight or twelve days. An issue he considers as useful in every case. The tumor, if not ulcerated, ought to be washed with a solution of arsenic in the proportion of eight grains to a pint; and he advises the following cataplasm: "Take of carrot juice one pound, of sugar of lead half an ounce, of arsenic, dissolved in distilled vinegar, half an ounce, of liquid laudanum a dram and an half; form the whole into a mass with as much powder of hemlock as is sufficient for the purpose. The tumor is to be covered to a moderate thickness with this cataplasm, which is to be kept on by a diachylon plaster." When the cancer is of the ulcerated kind, he directs the ichorous serosity to be taken away by means of dry charpee at each dressing, and the sore to be fomented with the arsenical solution with the chill taken off it, and having about a third part of red wine added to it. When the sore is of a very bad kind, he proposes the arsenic to be dissolved in decoction of bark for the purpose of fomentation; after which the cataplasm and plaster are to be applied, and this is to be renewed every twelve hours.

M. Le Febure asserts, that the arsenic, when taken with the precautions just mentioned, is not attended with any bad consequences, nor has it a disagreeable taste. Its action is scarcely perceived on any of the secretions or excretions; though some discharge their urine more freely than usual, and with some the belly is more loose. In some the perspiration is more copious; but these effects are neither regular nor constant. He does not consider it as an infallible cure for the distemper in every possible stage; but thinks that the disease is incurable, when, in its progress, it has eroded a blood-vessel, and occasioned a considerable hemorrhagy; also when the patient is of a hectic or phthical habit of body. With respect to regimen, he directs whey, with twelve grains of nitre to the bottle, or a weak decoction of althea with an equal quantity of nitre; and to abstain from wine and fermented liquors. Broth made with beef, veal, or chicken, is also proper.

Mr Bergman informs us, that "it can hardly be doubted but arsenic may be applied to valuable purposes in medicine, and experiments have long ago put that out of doubt; but with respect both to its dose and preparation, the utmost caution is necessary."

12
Mr Bergman's opinion.

Dr Black, however, has seen the internal exhibition of arsenic, in those cases where it is recommended by foreign physicians, attended with very dangerous consequences, such as hectics, &c. He has likewise known obstinate ulcers healed by it. Yet though the external use of arsenic has proved successful in some cases, it has often, even in this way, produced very terrible consequences; so that the Doctor, far from recommending the internal use of it, reprobates it even in external applications.

13
The internal exhibition of arsenic proved by Dr Black.

As physicians are often called in cases where it is suspected that people have died from the effects of ar-

senic

Arsenic.
Lectures on
Chemistry.

14
Directions
to a physi-
cian how to
act when
called in
cases of ar-
senic being
swallowed.

senic taken internally, Doctor Black gives the following directions to the physician who happens to be thus employed.

"He should answer every question put to him with caution, as the lives and reputations of many often depend on his opinions.

"The first question usually put is, Whether, from the symptoms of the patient, or the appearance of the body after death, he imagines the deceased died by being poisoned with arsenic? The symptoms attending the taking of arsenic are, in about a quarter of an hour, sickness at stomach, succeeded by vomiting, purging, burning pain in the bowels, heat and thirst, pains and cramps in the legs and thighs, syncope, and death. When the body is examined, the intestines appear inflamed and corroded; nay, some ulcerations appear about the anus even before death. But we must take care not to be deceived by erosions of the stomach occasioned by the gastric juice, which has a power of dissolving the stomach after death. The difference is, that the arsenic occasions inflammation and blackness, whereas none appears in the other case. If the person escapes, he is in danger of being afflicted by marasmus, paralytic affections of the limbs, great debility, &c.

"The second question generally asked is, Whether any arsenic has been found in the intestines? The method of discovering this is as follows. The contents of the stomach and intestines should be taken out and washed in water; and any powder it contains suffered to separate. If any arsenic be mixed with it, it will fall to the bottom, and must then be examined by the following methods.

"1. By laying it on a red hot iron. If it be arsenic, it will evaporate, without melting, in a thick white vapour; and this may be shown by the 40th part of a grain.

"2. We may mix some of it with charcoal; in which state, if it be arsenic, it will emit an odour very like garlic; but this will not be perceived unless it be mixed with charcoal or some inflammable matter.

"3. We may inclose the powder with some charcoal, between two polished bits of copper, the edges of which are moistened with a lute made of two parts of fine sand and one of pipe-clay. The plates being then bound together with a wire, and the whole made red hot, the arsenical powder will thus be metallized, and, penetrating the copper, a blackish skin will first appear upon it; which being rubbed off, the parts which the arsenical vapour has touched will appear of a whitish or lead colour.

"4. We may metallize or reduce the arsenic in a glass tube, by means of the black flux. This is easily done by mixing two or three parts of the flux with one of the powder. This mixture being put into a small glass tube, and a heat applied sufficient for volatilizing the arsenic, the greatest part of it will be metallized. One end of the tube is to be left open at first, and then stopped with lint or wool; the other made red hot; and if the tube be then broken, the arsenic is found metallized. One grain of arsenic will be sufficient for all those experiments."

The first symptoms which ensue on the taking of arsenic show that it is of a highly inflammatory, caustic, and corrosive nature, with regard to the system in ge-

neral, and the intestines in particular: the pulse becomes extremely weak and irritable, and this is attended with a kind of paralytic affection of the limbs, marasmus, &c. Milk and oil have been recommended as antidotes: but the milk may curdle, and the oil will not mix with the fluids in the intestines. It is therefore advisable, when a physician is called to a patient who has swallowed arsenic, to make use of mucilages. A friend of Dr Black's, who had no mucilage at hand, thought of the whites of eggs, and succeeded. After the violence of the first attack is over, a milk diet, opiates, &c. are proper; and some time after, electricity has been found of great service. Some have advised to exhibit hepar sulphuris, as already noticed: but this is founded, not on experience, but theory; and it cannot be supposed that such a quantity can enter the system as will be sufficient for neutralizing the arsenic, and converting it into orpiment, which is the design of exhibiting it.

The following account of the use of arsenic in medicine is given by Dr Duncan. "Notwithstanding, however, the very violent effects of arsenic, it has been employed in the cure of diseases, both as applied externally and as taken internally. Externally, white arsenic has been chiefly employed in cases of cancer; and as used in this way, it is supposed that its good effects depend on its acting as a peculiar corrosive: and it is imagined, that arsenic is the basis of a remedy long celebrated in cancer, which, however, is still kept a secret by a family of the name of *Plunket* in Ireland. According to the best conjectures, their application consists of the powder of some vegetables, particularly the ranunculus flammæus and cotula foetida, with a considerable proportion of arsenic and flower of sulphur intimately mixed together. This powder, made into a paste with the white of an egg, is applied to the cancerous part which it is intended to corrode; and being covered with a piece of thin bladder, smeared also with the white of an egg, it is suffered to lie on from 24 to 48 hours; and afterwards the eschar is to be treated with softening digestive, as in other cases.

"Arsenic, in substance, to the extent of an eighth of a grain for a dose, combined with a little of the flowers of sulphur, has been said to be employed internally in some very obstinate cases of cutaneous diseases, and with the best effect. But of this we have no experience.

"Of all the diseases in which white arsenic has been used internally, there is no one in which it has been so frequently and so successfully employed as in the cure of intermittent fevers. It has been long used in Lincolnshire, and some other of the fenny countries, under the name of the *arsenic drop*, prepared in different ways: And it is conjectured, that an article, which has had a very extensive sale, under the title of the *tasteless ague-drop*, the form of preparing which, however, is still kept a secret, is nothing else but a solution of arsenic. But whether this be the case or not, we have now the most satisfactory information concerning this article in the "Medical Reports, of the effects of Arsenic in the cure of agues, remitting fevers, and periodic headaches," by Dr Fowler of Stafford. He directs, that 64 grains of arsenic, reduced to a very fine powder, and mixed with as much fixed vegetable alkaline salt, should be added to half a pound of distilled water in a Florence flask; that it should be then placed in a sand-heat-

Arsenic.

Edinburgh
New Dis-
pensatory.

Arsenic.

heat, and gently boiled till the arsenic be completely dissolved; that after the solution is cold, half an ounce of compound spirit of lavender be added to it, and as much distilled water as to make the whole solution amount to a pound. This solution is taken in doses, regulated according to the age, strength, and other circumstances of the patient from two to twelve drops, once, twice, or oftener in the course of the day. And in the diseases mentioned above, particularly in intermittents, it has been found to be a safe and very efficacious remedy, both by Dr Fowler and by other practitioners: but in some instances, even when given in very small dose, we have found it excite violent vomiting. But besides this, it has also been alleged by some, that those cured of intermittents by arsenic are very liable to become phthical. If arsenic shall ever be extensively employed internally, it will probably be most certain and most safe in its operation when brought to the state of a salt readily soluble in water."

15
Other uses
of arsenic.

† See Sym-
pathetic
ink.

16
Of the a-
dulteration
of win. s.

With regard to its other uses he expresses himself thus: "Philosophers are wont to evince the extraordinary porosity of bodies, and the wonderful subtilty of vapours, by a sympathetic ink made with orpiment and lime†; for writing made with vinegar of litharge, by itself invisible, exposed to the vapour of this liquor becomes in a few minutes brown, even though a great many folds of paper be interposed.

"Wines naturally acid, or grown so by age, still continues to be edulcorated by lead, notwithstanding the punishments attending the detection of this fraud: it is therefore of great consequence to be in possession of an easy method of discovering such a sophistication. For this purpose a probatory liquor has been recommended, composed of caustic fixed alkali and orpiment; which instantly throws down a black or dark-brown precipitate in consequence of the union of the sulphur of the orpiment with the metal. The same effect will take place on the addition of common hepar sulphuris; but methods have been contrived of eluding this proof. If a small quantity of chalk be contained in the wine, the saline hepar does not produce the intended effect; for the falling of the white calcareous earth diminishes the blackness. The other probatory liquor is also rendered ineffectual by a large quantity of tartar; because the tartareous acid, uniting with the lime, forms a kind of selenite, which in like manner diminishes the blackness.

17
Arsenic in
composition
with metals,
&c.

"Arsenic sometimes enters metallic compositions, especially copper and tin; but it were much to be wished that such compositions were bannished, at least from the kitchen. Shot made of lead is sometimes hardened by orpiment.

"Regulus of arsenic enters into the composition of Meuder's phosphorus. The power of the calx in vitrification was long ago known to Geber; and it is frequently employed in glass houses, either for facilitating fusion, for acquiring a certain degree of opacity, or finally for carrying off phlogiston. The method in which mountain-crystals, placed over orpiment, white arsenic, crude antimony, and sal ammoniac, mixed in a crucible, are tinged by means of heat, is described by Neri, and upon trial is found to be true. I have thus obtained these crystals beautifully marked with red, yellow, and opal spots; but at the same time cracked, which could scarcely be avoided.

"In painting, too, the artists sometimes employ arsenic. Painters in oil frequently use both orpiment and realgar; and it is probable that wood covered with a pigment mixed with white arsenic would not be spoiled by worms. A most beautiful green pigment may be precipitated from blue vitriol by means of white arsenic dissolved in water, together with vegetable alkali. This prepared either with water or oil, affords a colour which suffers no change in many years. The playthings of children, however, should not be painted with this or any other preparation of arsenic, on account of their custom of putting every thing into their mouth."

Arsenic is also used in dyeing, and the yellow combination of it with sulphur has the property of readily dissolving indigo; for which purpose it is used in cloth-printing. It lets it fall again, however, on exposure to the air; and therefore can be employed only in pencil colours, where a large quantity is laid on at once. The neutral arsenical salt is used in some manufactures in France; but for what purposes is not known.

ARSENIUS, a deacon of the Roman church, of great learning and piety. He was pitched upon by the pope to go to the Emperor Theodosius, as tutor to his son Arcadius. Arsenius arrived at Constantinople in the year 383. The emperor happening one day to go into the room where Arsenius was instructing Arcadius, his son was seated and the preceptor standing; at this he was exceedingly displeased, took from his son the imperial ornaments, made Arsenius sit in his place, and ordered Arcadius for the future to receive his lessons standing uncovered. Arcadius, however, profited but little by his tutor's instructions, for some time after he formed a design of dispatching him. The officer to whom Arcadius had applied for this purpose, divulged the affair to Arsenius, who retired to the deserts of Scete, where he passed many years in the exercises of the most strict and fervent devotion. He died there, at 95 years of age.

ARSHOT, a town of the Austrian Netherlands, situated about 14 miles east of the city of Mechlin, in E. Long. 4. 45. N. Lat. 51. 5.

ARSINOE (anc. geog.), a town of Egypt, on the west side of the Arabian gulf, near its extremity, to the south of Heroopolis (Strabo, Ptolemy); called *Cleopatris* by some. Another Arfinoe, a town of Cilicia, (Ptolemy); and the fifth of that name in Cilicia, (Stephanus); with a road or station for ships, (Strabo). A third Arfinoe, in the south of Cyprus, with a port between Citium and Salamis, (Strabo). A fourth, an inland town of Cyprus, called *Marium* formerly, (Stephanus). A fifth in the north of Cyprus, between Acamas and Soli, (Strabo); so called from Arfinoe, a queen of Egypt, Cyprus being in the hands of the Ptolemies. A sixth Arfinoe, a maritime town of Cyrene, formerly called *Teuchira*. A seventh Arfinoe, in the Nomos Arfinoites, to the west of the Heracleotes, on the western bank of the Nile, formerly called *Crocodylorum Urbs* (Strabo); the name *Arfinoe* continued under Adrian (Coin). Ptolemy calls this Arfinoe an inland metropolis, and therefore at some distance from the Nile, with a port called *Ptolemais*. An eighth Arfinoe, a maritime town of Lycia; so called by Ptolemy. Philadelphus, after the name of his consort, which did not hold long, it afterwards recovering its ancient name

Pataras,

Arsenic

Arfinoe.

18

In painting.

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||
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Patara, (Strabo). A ninth, a town of the Troglodytæ, near the mouth of the Arabian gulf, which towards Ethiopia is terminated by a promontory called Dire (Ptolemy). This Arsinoe is called *Betenice*, and the third of that name in this quarter, with the distinction *Epidires*; because situate on a neck of land running out a great way into the sea.

ARSIS and THESIS, in music, is a term applied to compositions in which one part rises and the other falls.

ARSMART in botany. See PERSICARIA.

ARSON, in English law, is the malicious and wilful burning of the house or out-house of another man; which is felony at common law.

This is an offence of very great malignity, and much more pernicious to the public than simple theft: because, first, it is an offence against that right of habitation which is acquired by the law of nature as well as by the laws of society; next, because of the terror and confusion that necessarily attends it; and, lastly, because in simple theft the thing stolen only changes its master, but still remains *in esse* for the benefit of the public; whereas by burning the very substance is absolutely destroyed. It is also frequently more destructive than murder itself, of which too it is often the cause: since murder, atrocious as it is, seldom extends beyond the felonious act designed, whereas fire too frequently involves in the common calamity persons unknown to the incendiary, and not intended to be hurt by him, and friends as well as enemies.

ARSURA, in ancient customs, a term used for the melting of gold or silver, either to refine them, or to examine their value.—The method of doing this is explained at large in the Black Book of the Exchequer, ascribed to Gervaise, in the chapter *De Officio Militis Argentarii*, being in those days of great use, on account of the various places and different manners in which the king's money was paid.

ARURA, is also used for the loss or diminution of the metal in the trial. In this sense, a pound was said *tot ardere denarios*, to lose so many penny-weights.

ARSURA is also used for the dust and sweepings of silver-smiths, and others, who work in silver, melted down.

ART is defined by Lord Bacon, A proper disposal of the things of nature by human thought and experience, so as to answer the several purposes of mankind; in which sense *art* stands opposed to *nature*.

Art is principally used for a system of rules serving to facilitate the performance of certain actions; in which sense it stands opposed to *science*, or a system of speculative principles.

Arts are commonly divided into *useful* or *mechanic*, *liberal* or *polite*. The former are those wherein the *hand* and *body* are more concerned than the *mind*; of which kind are most of those which furnish us with the *necessaries* of life, and are popularly known by the name of *trades*; as baking, brewing, carpentry, smithery, weaving, &c.—The latter are such as depend more on the labour of the *mind* than that of the *hand*; they are the produce of the *imagination*, their essence consists in *expression*, and their end is *pleasure*. Of this kind are poetry, painting, music, &c.

Origin. Progress of the Arts. Some useful arts must be nearly coeval with the human race; for food, cloathing,

and habitation, even in their original simplicity, require some art. Many other arts are of such antiquity as to place the inventors beyond the reach of tradition. Several have gradually crept into existence without an inventor. The busy mind, however, accustomed to a beginning in things, cannot rest till it finds or imagines a beginning to every art. The most propable conjectures of this nature the reader may see in the historical introductions to the different articles.

In all countries where the people are barbarous and illiterate, the progress of arts is extremely slow. It is vouched by an old French poem, that the virtues of the loadstone were known in France before anno 1180. Sk. V.]

The mariner's compass was exhibited at Venice anno 1260, by Paulus Venetus, as his own invention. John Goya of Amalphi was the first who, many years afterward, used it in navigation; and also passed for being the inventor. Though it was used in China for navigation long before it was known in Europe, yet to this day it is not so perfect as in Europe. Instead of suspending it in order to make it act freely, it is placed upon a bed of sand, by which every motion of the ship disturbs its operation. Hand-mills, termed *querns*, were early used, for grinding corn; and when corn came to be raised in greater quantity, horse-mills succeeded. Water-mills for grinding corn are described by Vitruvius. Wind-mills were known in Greece and in Arabia as early as the seventh century; and yet no mention is made of them in Italy till the fourteenth. That they were not known in England in the reign of Henry VIII. appears from a household book of an earl of Northumberland, cotemporary with that king, stating an allowance for three mill-horses, "two to draw in the mill, and one to carry stuff to the mill and fro." Water-mills for corn must in England have been of a later date. The ancients had mirror-glasses, and employed glass to imitate crystal vases and goblets; yet they never thought of using it in windows. In the 13th century, the Venetians were the only people who had the art of making crystal-glass for mirrors. A clock that strikes the hours was unknown in Europe till the end of the 12th century. And hence the custom of employing men to proclaim the hours during night; which to this day continues in Germany, Flanders, and England. Galileo was the first who conceived an idea that a pendulum might be useful for measuring time; and Huygens was the first who put the idea in execution, by making a pendulum clock. Hook, in the year 1660, invented a spiral spring for a watch, though a watch was far from being a new invention. Paper was made no earlier than the 14th century; and the invention of printing was a century later. Silk manufactures were long established in Greece before silk-worms were introduced there. The manufacturers were provided with raw silk from Persia: but that commerce being frequently interrupted by war, two monks, in the reign of Justinian, brought eggs of the silk-worm from Hindostan, and taught their countrymen the method of managing them.—The art of reading made a very slow progress. To encourage that art in England, the capital punishment for murder was remitted if the criminal could but read, which in law-language is termed *benefit of clergy*. One would imagine that the art must have made a very rapid progress when so greatly favoured; but there is a signal proof

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and

progress of
useful arts.
[Kames's
Sketches,
Sk. V.]

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of the contrary: for so small an edition of the Bible as 600 copies, translated into English in the reign of Henry VIII. was not wholly sold off in three years. The people of England must have been profoundly ignorant in Queen Elizabeth's time, when a forged clause added to the 20th article of the English creed passed unnoticed till about 50 years ago.

The discoveries of the Portuguese in the west coast of Africa is a remarkable instance of the slow progress of arts. In the beginning of the 15th century, they were totally ignorant of that coast beyond Cape Non, 28 deg. north latitude. In 1410, the celebrated Prince Henry of Portugal fitted out a fleet for discoveries, which proceeded along the coast to Cape Bojadore, in 26 deg. but had not courage to double it. In 1418, Trifan Vaz discovered the island Porto Santo; and the year after, the island Madeira was discovered. In 1439, a Portuguese captain doubled Cape Bojadore; and the next year the Portuguese reached Cape Blanco, lat. 20 deg. In 1446, Nuna Trifan doubled Cape Verd, lat. 14. 40. In 1448, Don Gonzallo Vallo took possession of the Azores. In 1449, the islands of Cape Verd were discovered for Don Henry. In 1471, Pedro d'Escovar discovered the island St Thomas and Prince's Island. In 1484, Diego Cam discovered the kingdom of Congo. In 1486, Bartholomew Diaz, employed by John II. of Portugal, doubled the Cape of Good Hope, which he called *Carbo Tormentoso*, from the tempestuous weather he found in the passage.

Causes
which ad-
vance the
progress of
art.

The exertion of national spirit upon any particular art, promotes activity to prosecute other arts. The Romans, by constant study, came to excel in the art of war, which led them naturally to improve upon other arts. Having, in the progress of society, acquired some degree of taste and polish, a talent for writing broke forth. Nevius composed in verse seven books of the Punic war; besides comedies, replete with bitter raillery against the nobility. Ennius wrote annals, and an epic poem. Lucius Andronicus was the father of dramatic poetry in Rome. Pacuvius wrote tragedies. Plautus and Terence wrote comedies. Lucilius composed satires, which Cicero esteems to be slight and void of erudition. Fabius Pictor, Cincius Alimentus, Piso Frugi, Valerius Antias, and Cato, were rather annalists than historians, confining themselves to naked facts, ranged in order of time. The genius of the Romans for the fine arts was much inflamed by Greek learning, when free intercourse between the two nations was opened. Many of those who made the greatest figure in the Roman state commenced authors; Cæsar, Cicero, &c. Sylla composed memoirs of his own transactions, a work much esteemed even in the days of Plutarch.

The progress of art seldom fails to be rapid, when a people happen to be roused out of a torpid state by some fortunate change of circumstances. Prosperity, contrasted with former abasement, gives to the mind a spring, which is vigorously exerted in every new pursuit. The Athenians made but a mean figure under the tyranny of Pisistratus: but upon regaining freedom and independence, they were converted into heroes. Miletus, a Greek city of Ionia, being destroyed by the king of Persia, and the inhabitants made slaves, the Athenians, deeply affected with the misery of their brethren, boldly attacked the king in his own dominions, and burnt the city of Sardis. In less than

10 years after, they gained a signal victory at Marathon; and, under Themistocles, made head against that prodigious army with which Xerxes threatened utter ruin to Greece. Such prosperity produced its usual effect: arts flourished with arms, and Athens became the chief theatre for sciences, as well as for fine arts. The reign of Augustus Cæsar, which put an end to the rancour of civil war, and restored peace to Rome, with the comforts of society, proved an auspicious æra for literature; and produced a cloud of Latin historians, poets, and philosophers, to whom the moderns are indebted for their taste and talents. One who makes a figure rouses emulation in all: one catches fire from another, and the national spirit is every where triumphant: classical works are composed, and useful discoveries made in every art and science. With regard to Rome, it is true, that the Roman government under Augustus was in effect despotic: but despotism, in that single instance, made no obstruction to literature, it having been the politic of that reign to hide power as much as possible. A similar revolution happened in Tuscany about three centuries ago. That country having been divided into a number of small republics, the people, excited by mutual hatred between small nations in close neighbourhood, became ferocious and bloody, flaming with revenge for the slightest offence. These republics being united under the Great Duke of Tuscany, enjoyed the sweets of peace in a mild government. That comfortable revolution, which made the deeper impression by a retrospect to recent calamities, roused the national spirit, and produced ardent application to arts and literature. The restoration of the royal family in England, which put an end to a cruel and envenomed civil war, promoted improvements of every kind: arts and industry made a rapid progress among the people, though left to themselves by a weak and fluctuating administration. Had the nation, upon that favourable turn of fortune, been blessed with a succession of able and virtuous princes, to what a height might not arts and sciences have been carried! In Scotland, a favourable period for improvement was the reign of the first Robert, after shaking off the English yoke; but the domineering spirit of the feudal system rendered abortive every attempt. The restoration of the royal family mentioned above, animated the legislature of Scotland to promote manufactures of various kinds: but in vain; for the union of the two crowns had introduced despotism into Scotland, which sunk the genius of the people, and rendered them heartless and indolent. Liberty, indeed, and many other advantages, were procured to them by the union of the two kingdoms; but the salutary effects were long suspended by mutual enmity, such as commonly subsists between neighbouring nations. Enmity wore out gradually, and the eyes of the Scots were opened to the advantages of their present condition; the national spirit was roused to emulate and to excel; talents were exerted, hitherto latent; and Scotland at present makes a figure in arts and sciences above what it ever made while an independent kingdom.

Another cause of activity and animation, is the being engaged in some important action of doubtful event; a struggle for liberty, the resisting a potent invader, or the like. Greece, divided into small states frequently at war with each other, advanced literature and

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and the fine arts to unrivalled perfection. The Corsicans, while engaged in a perilous war for defence of their liberties, exerted a vigorous national spirit; they founded a university for arts and sciences, a public library, and a public bank. After a long stupor during the dark ages of Christianity, arts and literature revived among the turbulent states of Italy. The royal society in London, and the academy of sciences in Paris, were both of them instituted after civil wars that had animated the people and roused their activity.

As the progress of arts and science toward perfection is greatly promoted by emulation, nothing is more fatal to an art or science than to remove that spur, as where some extraordinary genius appears who soars above rivalry. Mathematics seem to be declining in Britain; the great Newton, having surpassed all the ancients, has not left to the moderns even the faintest hope of equalling him; and what man will enter the lists who despairs of victory?

In a country thinly peopled, where even necessary arts want hands, it is common to see one person excelling more arts than one: in several parts of Scotland, one man serves as a physician, surgeon, and apothecary. In every populous country, even simple arts are split into parts, and each part has an artist appropriated to it. In the large towns of ancient Egypt, a physician was confined to a single disease. In mechanic arts that method is excellent. As a hand confined to a single operation becomes both expert and expeditious, a mechanic art is perfected by having its different operations distributed among the greatest number of hands: many hands are employed in making a watch, and a still greater number in manufacturing a web of woollen cloth. Various arts or operations carried on by the same man, enervate his mind, because they exercise different faculties; and as he cannot be equally expert in every art or operation, he is frequently reduced to supply want of skill by thought and invention. Constant application, on the contrary, to a single operation, confines the mind to a single object, and excludes all thought and invention: in such a train of life, the operator becomes dull and stupid, like a beast of burden. The difference is visible in the manners of the people: in a country where, from want of hands, several occupations must be carried on by the same person, the people are knowing and conversable: in a populous country, where manufactures flourish, they are ignorant and unsociable. The same effect is equally visibly in countries where an art or manufacture is confined to a certain class of men. It is visible in Hindostan, where the people are divided into casts, which never mix even by marriage, and where every man follows his father's trade. The Dutch lint-boors are a similar instance: the same families carry on the trade from generation to generation; and are accordingly ignorant and brutish even beyond other Dutch peasants. The inhabitants of Buckhaven, a sea-port in the county of Fife, were originally a colony of foreigners, invited hither to teach our people the art of fishing. They continue fishers to this day, marry among themselves, have little intercourse with their neighbours, and are dull and stupid to a proverb.

3
Progress of
the fine
arts.

Useful arts paved the way to fine arts. Men upon whom the former had bestowed every convenience,

turned their thoughts to the latter. Beauty was studied in objects of sight; and men of taste attached themselves to the fine arts, which multiplied their enjoyments, and improved their benevolence. Sculpture and painting made an early figure in Greece; which afforded plenty of beautiful originals to be copied in these imitative arts. Statuary, a more simple imitation than painting, was sooner brought to perfection: the statue of Jupiter by Phidias, and of Juno by Polycletes, though the admiration of all the world, were executed long before the art of light and shade was known. Apollodorus, and Zeuxis his disciple, who flourished in the 15th Olympiad, were the first who figured in that art. Another cause concurred to advance statuary before painting in Greece, viz. a great demand for statues of their gods. Architecture, as a fine art, made a slower progress. Proportions, upon which its elegance chiefly depends, cannot be accurately ascertained, but by an infinity of trials in great buildings; a model cannot be relied on: for a large and a small building, even of the same form, require different proportions.

From the fine arts mentioned, we proceed to literature. It is agreed, among all antiquaries, that the first writings were in verse, and that writing in prose was of a much later date. The first Greek who wrote in prose was Pherecides Syrus: the first Roman was Appius Cæcus, who composed a declamation against Pyrrhus. The four books of the Chatah Bhade, which is the sacred book of Hindostan, are composed in verse stanzas; and the Arabian compositions in prose followed long after those in verse. To account for that singular fact, many learned pens have been employed; but without success. By some it has been urged, that as memory is the only record of events where writing is unknown, history originally was composed in verse for the sake of memory. This is not satisfactory. To undertake the painful task of composing in verse merely for the sake of memory, would require more foresight than ever was exerted by a barbarian: not to mention that other means were used for preserving the memory of remarkable events; a heap of stones, a pillar, or other object that catches the eye. The account given by Longinus is more ingenious. In a fragment of his treatise on verse, the only part that remains, he observes, "that measure or verse belongs to poetry, because poetry represents the various passions with their language; for which reason the ancients, in their ordinary discourse, delivered their thoughts in verse rather than in prose." Longinus thought, that anciently men were more exposed to accidents and dangers, than when they were protected by good government than by fortified cities. But he seems not to have adverted, that fear and grief, inspired by dangers and misfortunes, are better suited to humble prose than to elevated verse. It may be added, that however natural poetical diction may be when one is animated with any vivid passion, it is not supposable that the ancients never wrote nor spoke but when excited by passion. Their history, their laws, their covenants, were certainly not composed in that tone of mind.

An important article in the progress of the fine arts, which writers have not sufficiently attended to, will perhaps explain this mystery. The article is the profession

Arts.

4
Literary
composition.

Art. session of a bard, which sprung up in early times, before writing was known*, and died away gradually as writing turned more and more common †.

* See the article
Writing.

† See *Bard*. The songs of the bards, being universal favourites, were certainly the first compositions that writing was employed upon: they would be carefully collected by the most skilful writers, in order to preserve them in perpetual remembrance. The following part of the progress is obvious. People acquainted with no written compositions but what were in verse, composed in verse their laws, their religious ceremonies, and every memorable transaction that was intended to be preserved in memory by writing. But when subjects of writing multiplied, and became more and more involved; when people began to reason, to teach, and to harangue; they were obliged to descend to humble prose: for to confine a writer or speaker to verse in handling subjects of that nature would be a burden unsupportable.

5
History.

The prose compositions of early historians are all of them dramatic. A writer destitute of art is naturally prompted to relate facts as he saw them performed: he introduces his personages as speaking and conferring; and he himself relates what was acted, and not spoke. The historical books of the Old Testament are composed in that mode; and so addicted to the dramatic are the authors of those books, that they frequently introduce God himself into the dialogue. At the same time, the simplicity of that mode is happily suited to the poverty of every language in its early periods. The dramatic mode has a delicious effect in expressing sentiment, and every thing that is simple and tender. Read, as an instance of a low incident becoming, by that means, not a little interesting. Ruth i. 8. to iv. 16.

The dramatic mode is far from pleasing so much in relating bare historical facts. Read, as an example, the story of Adonijah in 1 Kings i. 11—49.

In that passage there are frequent repetitions; not however by the same person, but by different persons who have occasion in the course of the story to say the same things; which is natural in the dramatic mode, where things are represented precisely as they were transacted. In that view, Homer's repetitions are a beauty, not a blemish; for they are confined to the dramatic part, and never occur in the narrative.

But the dramatic mode of composition, however pleasing, is tedious and intolerable in a long history. In the progress of society new appetites and new passions arise; men come to be involved with each other in various connections; incidents and events multiply, and history becomes intricate by an endless variety of circumstances. Dialogue accordingly is more sparingly used, and in history plain narration is mixed with it. Narration is as it were the ground-work; and dialogue is raised upon it like flowers in embroidery. Homer is admitted by all to be the great master in that mode of composition.

The narrative mode came in time so to prevail, that in a long chain of history, the writer commonly leaves off dialogue altogether. Early writers of that kind appear to have very little judgment in distinguishing capital facts from minute circumstances, such as can be supplied by the reader without being mentioned. The history of the Trojan war by Dares Phrygius is a cu-

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rious instance of that cold and creeping manner of composition. The Roman histories before the time of Cicero are chronicles merely. Cato, Fabius Pictor, and Piso, confined themselves to naked facts. In the Augustæ Historiæ Scriptores we find nothing but a jejune narrative of facts, commonly of very little moment, concerning a degenerate people, without a single incident that can rouse the imagination or exercise the judgment. The monkish histories are all of them composed in the same manner.

The dry narrative manner being very little interesting or agreeable, a taste for embellishment prompted some writers to be copious and verbose. Saxo Grammaticus, who in the 12th century composed in Latin a history of Denmark, surprisingly pure at that early period, is extremely verbose and full of tautologies. Such a style, at any rate unpleasant, is intolerable in a modern tongue, before it is enriched with a flock of phrases for expressing aptly the great variety of incidents that enter into history.

The perfection of historical composition which writers at last attain to after wandering through various imperfect modes, is a relation of interesting facts, connected with their motives and consequences. An history of that kind is truly a chain of causes and effects.

The history of Thucydides, and still more that of Tacitus, are shining instances of that mode.

Eloquence was of a later date than the art of literary composition; for till the latter was improved, there were no models for studying the former. Cicero's oration for Roscius is composed in a style diffuse and highly ornamented; which, says Plutarch, was universally approved, because at that time the style in Asia, introduced into Rome with its luxury, was in high vogue. But Cicero, in a journey to Greece, where he leisurely studied Greek authors, was taught to prune off superfluities, and to purify his style, which he did to a high degree of refinement. He introduced into his native tongue a sweetness, a grace, a majesty, that surprised the world, and even the Romans themselves. Cicero observes with great regret, that if ambition for power had not drawn Julius Cæsar from the bar to command legions, he would have become the most complete orator in the world. So partial are men to the profession in which they excel. Eloquence triumphs in a popular assembly, makes some figure in a court of law composed of many judges, very little where there is but a single judge, and none at all in a despotic government. Eloquence flourished in the republics of Athens and of Rome; and makes some figure at present in a British house of commons.

The Greek stage has been justly admired among all polite nations. the tragedies of Sophocles and Euripides in particular are by all critics held to be perfect in their kind, excellent models for imitation, but far above rivalry. If the Greek stage was so early brought to maturity, it is a phenomenon not a little singular in the progress of arts. The Greek tragedy make a rapid progress from Thespis to Sophocles and Euripides, whose compositions are wonderful productions of genius, considering that the Greeks at that period were but beginning to emerge from roughness and barbarity into a taste for literature. The compositions of Eschylus, Sophocles, and Euripides, must have

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6

7
Tragedy.

Art.

have been highly relished among a people who had no idea of any thing more perfect. We judge by comparison, and every work is held to be perfect that has no rival. It ought at the same time to be kept in view, that it was not the dialogue which chiefly enchanted the Athenians, nor variety in the passions represented, nor perfection in the actors; but machinery and pompous decoration, joined with exquisite music. That these particulars were carried to the greatest height, we may with certainty conclude from the extravagant sums bestowed on them: the exhibiting a single tragedy was more expensive to the Athenians than their fleet or their army in any single campaign.

One would imagine, however, that these compositions were too simple to enchant for ever; as variety in action, sentiment, and passion, is requisite, without which the stage will not continue long a favourite entertainment: and yet we find not a single improvement attempted after the days of Sophocles and Euripides. The manner of performance, indeed, prevented absolutely any improvement. A fluctuation of passion and refined sentiments would have made no figure on the Grecian stage. Imagine the discording scene between Brutus and Cassius in Julius Cæsar to be there exhibited, or the handkerchief in the Moor of Venice: how slight would be their effect, when pronounced in a mask, and through a pipe? The workings of nature upon the countenance, and the flexions of voice expressive of various feelings, so deeply affecting in modern representation, would have been entirely lost. If a great genius had arisen with talents for composing a pathetic tragedy in perfection, he would have made no figure in Greece. An edifice must have been erected of a moderate size; new actors must have been trained to act with a bare face, and to pronounce in their own voice. And after all, there remained a greater miracle still to be performed, viz. a total reformation of taste in the people of Athens. In one word, the simplicity of the Greek tragedy was suited to the manner of acting; and that manner excluded all improvements.

8
Comedy.

With respect to comedy, it does not appear that the Greek comedy surpassed the tragedy in its progress toward perfection. Horace mentions three stages of Greek comedy. The first well suited to the rough and coarse manners of the Greeks, when Eupolis, Cratinus, and Aristophanes, wrote. These authors were not ashamed to represent on the stage real persons, not even disguising their names: of which we have a striking instance in a comedy of Aristophanes, called *The Clouds*, where Socrates is introduced, and most contemptuously treated. This sort of comedy, sparing neither gods nor men, was restrained by the magistrates of Athens, so far as to prohibit persons to be named on the stage. This led writers to do what is done at present: the characters and manners of known persons were painted so much to the life, that there could be no mistake; and the satire was indeed heightened by this regulation, as it was an additional pleasure to find out the names that were meant in the representation. This was termed the *middle comedy*. But as there still remained too great scope for obloquy and licentiousness, a law was made prohibiting real events or incidents to be introduced upon the stage. This law happily banished satire against individuals, and confined it to manners and customs in general. Obedient to this law are

the comedies of Menander, Philemon, and Diphilus, who flourished about 300 years before the Christian era. And this is termed the *third stage* of Greek comedy. The comedies of Aristophanes which still remain, err not less against taste than against decency. But the Greek comedy is supposed to have been considerably refined by Menander and his contemporaries. Their works, however, were far from perfection, if we can draw any conjecture from their imitator Plautus, who wrote about a century later. Plautus was a writer of genius; and it may be reasonably supposed that his copies did not fall much short of the originals, at least in matters that can be faithfully copied; and he shows very little art either in his compositions or in the conduct of his pieces. With respect to the former, his plots are wondrous simple, very little varied, and very little interesting. The subject of almost every piece is a young man in love with a music-girl, desiring to purchase her from the procurer, and employing a favourite slave to cheat his father out of the price; and the different ways of accomplishing the cheat is all the variety we find. In some few of his comedies the story rises to a higher tone, the music-girl being discovered to be the daughter of a freeman, which removes every obstruction to a marriage between her and her lover. In the conduct of his pieces there is a miserable defect of art. Instead of unfolding the subject in the progress of the action, as is done by Terence, and by every modern writer, Plautus introduces a person for no other end but to explain the story to the audience. In one of his comedies, a household god is so obliging as not only to unfold the subject, but to relate beforehand every particular that is to be represented, not excepting the catastrophe.

The Roman theatre, from the time of Plautus to that of Terence, made a rapid progress. Aristotle defines comedy to be "an imitation of light and trivial subjects, provoking laughter." The comedies of Plautus correspond accurately to that definition: those of Terence rise to a higher tone.

Nothing is more evident than the superiority of Terence above Plautus in the art of writing; and, considering that Terence is a later writer, nothing would appear more natural, if they did not copy the same originals. It may be owing to genius that Terence excelled in purity of language and propriety of dialogue; but how account for his superiority over Plautus in the construction and conduct of a play? It will not certainly be thought, that Plautus would imitate the worst constructed plays, leaving the best to those who should come after him. This difficulty does not seem to have occurred to any of the commentators. Had the works of Menander and of his contemporaries been preserved, they probably would have explained the mystery; which for want of that light will probably remain a mystery for ever.

Homer has for more than 200 years been held the prince of poets. Such perfection in an author who flourished when arts were far short of maturity, is truly wonderful. The nations engaged in the Trojan war are described by him as in a progress from the shepherd-state to that of agriculture. Frequent mention is made in the Iliad of the most eminent men being shepherds. Andromache, in particular, mentions seven of her brethren who were slain by Achilles as they tended their father's

Art.

Epoëe.

Art.

father's flocks and herds. In that state, garments of woollen cloth were used; but the skins of beasts, the original clothing, were still worn as an upper garment: every chief in the Iliad appears in that dress. Such indeed was the simplicity of this early period, that a black ewe was promised by each chief to the man who would undertake to be a spy. In times of such simplicity, literature could not be far advanced; and it is a great doubt, whether there was at that time a single poem of the epic kind for Homer to imitate or improve upon. Homer is undoubtedly a wonderful genius, perhaps the greatest that ever existed: his fire, and the boldness of his conceptions, are inimitable. But in that early age, it would fall little short of a real miracle, to find such ripeness of judgment, and correctness of execution, as in modern writers are the fruits of long experience and progressive improvements during the course of many centuries. Accordingly, that Homer is far from being so ripe, or so correct, cannot escape the observation of any reader of taste and discernment. One striking particular is, his digressions without end, which draw our attention from the principal subject. Diomedes, for instance, meeting with Glaucus in the field of battle, and doubting from his majestic air, whether he might not be an immortal, inquires who he was, declaring that he would not fight with a god. Glaucus lays hold of this very slight opportunity, in the very heat of action, to give a long history of his family. In the mean time, the reader's patience is put to a trial, and his ardour cools. Again, Agamemnon desiring advice how to resist the Trojans, Diomedes springs forward; but before he offers advice, gives the history of all his progenitors, and of their characters, in a long train. And, after all, what was the sage advice that required such a preface? It was, that Agamemnon should exhort the Greeks to fight bravely. At any rate, was Diomedes so little known, as to make it proper to suspend the action at so critical a juncture, for a genealogical history? There is a third particular which justly merits censure; and that is, an endless number of minute circumstances, especially in the description of battles, where they are most improper. The capital beauty of an epic poem is, the selection of such incidents and circumstances as make a deep impression, keeping out of view every thing low or familiar. An account of a single battle employs the whole fifth book of the Iliad and a great part of the sixth: yet in the whole there is no general action; but unknown warriors, whom we never heard of before, killed at a distance with an arrow or a javelin; and every wound described with anatomical accuracy. The whole seventeenth book is employed in the contest about the dead body of Patroclus, stuffed with minute circumstances, below the dignity of an epic poem. In such scenes the reader is fatigued with endless particulars; and has nothing to support him but the melody of Homer's versification.

10
Causes of
the decline
of the fine
arts.

Having traced the progress of the fine arts toward maturity, in a summary way, the decline of these arts comes next in order. An art, in its progress toward maturity, is greatly promoted by emulation; and, after arriving at maturity, its downfall is no less promoted by it. It is difficult to judge of perfection but by comparison; and an artist, ambitious to outstrip his predecessors, cannot submit to be an imitator, but must

Art.

strike out something new, which, in an art advanced to ripeness, seldom fails to be a degeneracy. This cause of the decline of the fine arts may be illustrated by various instances. The perfection of vocal music is to accompany passion, and to enforce sentiment. In ancient Greece, the province of music was well understood; which being confined within its proper sphere, had an enchanting influence. Harmony at that time was very little cultivated, because it was of very little use: melody reaches the heart, and it is by it chiefly that a sentiment is enforced, or a passion soothed; harmony, on the contrary, reaches the ear only; and it is a matter of undoubted experience, that the most melodious airs admit but of very simple harmony. Artists, in latter times, ignorant why harmony was so little regarded by the ancients, applied themselves seriously to its cultivation; and they have been wonderfully successful. But they have been successful at the expence of melody; which in modern compositions, generally speaking, is lost amid the blaze of harmony. These compositions tickle the ear by the luxury of complicated sounds, but seldom make any impression on the heart. The Italian opera, in its form, resembles the Greek tragedy, from which it is evidently copied; but very little in substance. In the latter, music being made subservient to sentiment, the dialogue is nervous and sublime: in the former, the whole weight is laid on music; and the dialogue, devoid of sentiment, is weak and spiritless. Restless man knows no golden mean, but will be attempting innovations without end.—By the same ambition, architecture has visibly declined from its perfection. The Ionic was the favourite order when architecture was in its height of glory. The Corinthian order came next; which, in attempting greater perfection, has deviated from the true simplicity of nature: and the deviation is still greater in the composite order. With respect to literary productions, the first essays of the Romans were very imperfect. We may judge of this from Plautus, whose compositions are abundantly rude, though much admired by his contemporaries, being the best that existed at that time. The exalted spirit of the Romans hurried them on to the grand and beautiful; and literary productions of all kinds were in perfection when Augustus reigned. In attempting still greater perfection, the Roman compositions became a strange jumble of inconsistent parts: they were tumid and pompous; and, at the same time, full of antitheses, conceit, and tinsel wit. Every thing new in the fine arts pleases, though less perfect than what we are accustomed to; and, for that reason, such compositions were generally relished. We see not by what gradual steps writers, after the time of Augustus, deviated from the patterns that were before them; for no book of any moment after that time is preserved till we come down to Seneca, in whose works nature and simplicity give place to artificial thought and bastard wit. He was a great corrupter of the Roman taste; and after him nothing was relished but brilliant strokes of fancy, with very little regard to sentiment: even Virgil and Cicero made no figure in comparison. Lucan has a forced elevation of thought and style very difficult to be supported; and accordingly, he sinks often into puerile reflections; witness his encomium on the river Po; which, says he, would equal the Danube, had it the

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same

Art.

same number of tributary streams. Quintilian, a writer of true and classical taste, who was protected and encouraged by Vespasian, attempted to stem the tide of false writing. His rhetoric is composed in an elegant style; and his observations contain every delicacy of the critical art. At the same time flourished Tacitus, possessing a more extensive knowledge of the nature of man than any other author, ancient or modern, if Shakespeare be not excepted. His style is original, concise, compact, and comprehensive; and, in what is properly called his *history*, perfectly correct and beautiful. He has been imitated by several, but never equalled by any. Brutus is said to be the last of the Romans for love of liberty: Quintilian and Tacitus may be said to be the last of the Romans for literary genius. Pliny the younger is no exception; his style is affected, turgid, and full of childish brilliancy. Seneca and Pliny are proper examples of writers who study show more than substance, and who make sense yield to sound. The difference between these authors and those of the Augustine age, resembles the difference between Greek and Italian music. Music, among the Greeks, limited itself to the employment to which it is destined by nature, viz. to be the handmaid of sense, to enforce, enliven, or sweeten a sentiment. In the Italian opera, the mistress is degraded to be handmaid; and harmony triumphs, with very little regard to sentiment.

Another great cause that precipitates the downfall of every fine art is despotism. The reason is obvious; and there is a dismal example of it in Rome, particularly with regard to eloquence. We learn from a dialogue, accounting for the corruption of the Roman eloquence, that in the decline of the art it became fashionable to stuff harangues with impertinent poetical quotations, without any view but ornament merely; and this also was long fashionable in France. It happened unluckily for the Romans, and for the world, that the fine arts were at their height in Rome, and not much upon the decline in Greece, when despotism put an end to the republic. Augustus, it is true, retarded their fall, particularly that of literature; it being the politic of his reign to hide despotism, and to give his government an air of freedom. His court was a school of urbanity, where people of genius acquired that delicacy of taste, that elevation of sentiment, and that purity of expression, which characterise the writers of his time. He honoured men of learning, admitted them to his table, and was bountiful to them. It would be painful to follow the decline of the fine arts in Rome to their total extirpation. The tyranny of Tiberius, and of subsequent emperors, broke at last the elevated and independent spirit of the brave Romans, reduced them to abject slavery, and left not a spark of genius. The science of law is the only exception, as it flourished even in the worst of times: the Roman lawyers were a respectable body, and less the object of jealousy than men of power and extensive landed property. Among the Greeks also, a conquered people, the fine arts decayed; but not so rapidly as at Rome; the Greeks, farther removed from the seat of government, being less within the reach of a Roman tyrant. During their depression, they were guilty of the most puerile conceits: witness verses composed in the form of an ax, an egg, wings, and such like. The style of Greek

authors, in the reign of the emperor Adrian, is unequal, obscure, stiff, and affected. Lucian is the only exception that may be made.

We need scarce any other cause but despotism to account for the decline of statuary and painting in Greece. These arts had arrived at their utmost perfection about the time of Alexander the Great; and from that time they declined gradually with the vigour of a free people; for Greece was now enslaved by the Macedonian power. It may in general be observed, that when a nation becomes stationary in that degree of power which it acquires from its constitution and situation, the national spirit subsides, and men of talents become rare. It is still worse with a nation that is sunk below its former power and pre-eminence; and worst of all when it is reduced to slavery. Other causes concurred to accelerate the downfall of the arts mentioned. Greece, in the days of Alexander, was filled with statues of excellent workmanship; and there being little demand for more, the later statuary were reduced to heads and busts. At last the Romans put a total end both to statuary and painting in Greece, by plundering it of its finest pieces; and the Greeks, exposed to the avarice of the conquerors, bestowed no longer any money on the fine arts.

The decline of the fine arts in Rome is by a * writer of taste and elegance ascribed to a cause different from any above mentioned, a cause that overwhelms manhood as well as the fine arts wherever it prevails; and that is opulence, joined with its faithful attendants avarice and luxury. "In ancient times (says he), when naked virtue had her admirers, the liberal arts were in the highest vigour; and there was a generous contest among men, that nothing of real and permanent advantage should long remain undiscovered. Democritus extracted the juice of every herb and plant; and, lest the virtue of a single stone or twig should escape him, he consumed a lifetime in experiments. Eudoxus, immersed in the study of astronomy, spent his age upon the top of a mountain. Chrysippus, to stimulate his inventive faculty, thrice purified his genius with hellebore. To turn to the imitative arts: Lysippus, while labouring on the forms of a single statue, perished for want. Myron, whose powerful hand gave to the brass almost the soul of man and animals,—at his death found not an heir! Of us of modern times what shall we say? Immersed in drunkenness and debauchery, we want the spirit to cultivate those arts which we possess. We inveigh against the manners of antiquity; we study vice alone; and vice is all we teach. Where now is the art of reasoning? Where astronomy? Where is the right path of wisdom? What man now-a-days is heard in our temples to make a vow for the attainment of eloquence, or for the discovery of the fountain of true philosophy? Nor do we even pray for health of body, or a sound understanding. One, while he has scarce entered the porch of the temple, devotes a gift in the event of the death of a rich relation; another prays for the discovery of a treasure; a third for a ministerial fortune. The senate itself, the exemplary preceptor of what is good and laudable, has promised a thousand pounds of gold to the capitol; and, to remove all reproach from the crime of avarice, has offered a bribe to Jupiter himself. How should we wonder that the art of painting has declined,

when,

Art.

*Petronius
Arbiter.

Art.

when, in the eyes both of the gods and men, there is more beauty in a mass of gold than in all the works of Phidias and Apelles.—In England, the fine arts are far from such perfection as to suffer by opulence. They are in a progress, it is true, toward maturity; but they proceed in a very slow pace.

There is still another cause that never fails to undermine a fine art in a country where it is brought to perfection, abstracting from every one of the causes above mentioned. It is remarked a little above, that nothing is more fatal to any art or to a science than a performance so much superior to all of the kind as to extinguish emulation. This remark is exemplified in the great Newton, who, having surpassed all the ancients, has not left to his countrymen even the faintest hope of rivalling him; and to that cause is attributed the visible decline of mathematics in Great Britain. The same cause would have been fatal to the arts of statuary and painting among the Greeks, even though they had continued a free people. The decay of painting in modern Italy is, probably, owing to the same cause: Michael Angelo, Raphael, Titian, &c. are lofty oaks that bear down young plants in their neighbourhood, and intercept from them the sunshine of emulation. Had the art of painting made a slower progress in Italy, it might have there continued in vigour to this day. Velleius Paterculus says judiciously, "Ut primo ad consequendos quos priores ducimus accendimur; ita, ubi aut præteriri aut æquari eos posse desperavimus, studium cum spe senescit; et quod adsequi non potest, sequi desinit: præteritoque eo in quo eminere non possumus, aliquid in quo nitamur conquerimus."

The decline of an art or science proceeding from the foregoing cause, is the most rapid where a strict comparison can be instituted between the works of different masters. The superiority of Newton above every other mathematician can be ascertained with precision; and hence the sudden decline of that science in Great Britain. In Italy a talent for painting continued many years in vigour, because no painter appeared with such superiority of genius as to carry perfection in every branch of the art. As one surpassed in designing, one in colouring, one in graceful attitudes, there was still scope for emulation. But when at last there was not a single perfection but what one or other master had excelled in, from that period the art began to languish. Architecture continued longer in vigour than painting, because the principles of comparison in the former are less precise than in the latter. The artist who could not rival his predecessors in an established mode, sought out a new mode for himself, which, though perhaps less elegant or perfect, was for a time supported by novelty.

Useful arts
less subject
to decline.

Useful arts will never be neglected in a country where there is any police; for every man finds his account in them. Fine arts are more precarious. They are not relished but by persons of taste, who are rare; and such as can spare great sums for supporting them are still more rare. For that reason, they will never flourish in any country, unless patronized by the sovereign, or by men of power and opulence. They merit such patronage, as one of the springs of government; and a capital spring they make, by multiplying amusements, and humanizing manners; upon

which account they have always been encouraged by good princes.

General Theory of the Polite Arts. The essence of the polite arts, as before observed, consists in *expression*. The end of all these arts is *pleasure*; whereas the end of the sciences is *instruction* and *utility*. Some of the polite arts indeed, as eloquence, poetry, and architecture, are frequently applied to objects that are useful, or exercised in matters that are instructive, as we shall show more particularly in their proper place; but in these cases, though the ground-work belongs to those sciences which employ the understanding, yet the expression arises from the inventive faculty. It is a picture that is designed by Minerva, to which the muses add the colouring, and the graces the frame. This union forms therefore the perfection of the art, according to that sententious and well known precept of Horace: *Omne tulit punctum, qui miscuit utile dulci*.

Under the denomination, therefore, of Polite Arts we comprehend, 1. Eloquence; 2. Poetry; 3. Music; 4. Painting; 5. Sculpture; 6. Graving; 7. Architecture; 8. Declamation; 9. Dancing. Particular descriptions of these arts are given under their respective names. This branch of the present article is intended as a general introduction to them; and, as such, will be occasionally referred to.

There is one very essential reflection, which it appears to us proper to make in the first place, on the polite arts in general. All the rules in the world are not sufficient to make a great poet, an able orator, or an excellent artist; because the quality necessary to form these, depends on the natural disposition, the fire of genius, which no human art can confer, but which is the pure gift of heaven. The rules, however, will prevent a man from being a bad artist, a dull orator, or a wretched poet; seeing they are the reflections of the greatest masters in those arts, and that they point out the rocks which the artist should shun in the exercise of his talents. They are of use moreover in facilitating his labours, and in directing him to arrive by the shortest and surest road to perfection. They refine, strengthen, and confirm, his taste. Nature, abandoned to herself, has constantly something wild and savage. Art, founded on just and sagacious rules, gives her elegance, dignity, and politeness; and it is impossible to sacrifice properly to the graces, without knowing the incense that is pleasing to them.

Beauty is the object of all the polite arts. It is not, however, so easy, as it may seem, to give a clear and determinate idea of what we precisely mean by that term*. Many able writers who have treated expressly on the subject, have shown that they were totally ignorant of what it was. It is one of those expressions that we comprehend immediately, that present us with a clear and precise idea, that leave a distinct impression on our minds, when it is simply written or pronounced; but which philosophers envelope in darkness, when they attempt to elucidate it by definitions and descriptions; and the more, as mankind have different ideas of beauty, their opinions and tastes being as various as their understandings and physiognomies. We may say, however, in general, that beauty results from the various perfections of which any object is susceptible, and which it actually possesses; and that the perfections which produce beauty consist principally in the

Art.

12

THEORY
of the pro-
lite arts.

13

What arts
so denomi-
nated.

14

Use of pre-
cepts.

15

Beauty, ge-
nius, taste,See the
article
Beauty.

Art.

the agreeable and delightful proportions which are found, 1. Between the several parts of the same object; 2. Between each part and the whole together; 3. Between the parts and the end or design of the object to which they belong. *Genius*, or invention, is that faculty of the mind by which *beauty* is produced.

¶ See *Taste*. *Taste* ||, disposition, or rather the natural sensation of the mind refined by art, serves to guide the genius in discerning, embracing, and producing, that which is beautiful of every kind. From whence it follows, that the general theory of the polite arts is nothing more than the knowledge of what they contain that is truly beautiful and agreeable; and it is this knowledge, this theory, which modern philosophers call by the Latin name of *æsthetica*.

It should be constantly remembered, that the essence of the polite arts consists in expression. This expression lies sometimes in the words, and sometimes in the pen; sometimes in sounds and their harmony, and at others in corporeal attitudes; sometimes in the pencil or in the chisel, and at others in the graver; sometimes in a proper disposition or judicious employment of the mechanic arts, and at others merely in their manner of acting. From whence arise those arts that we have mentioned, and which are described in their order.

16
First general rule.

The general theory of the polite arts, or *æsthetics*, necessarily supposes, therefore, certain rules; but these general rules are of no great number. The first is, That whoever would devote himself to the polite arts, should above all things consult his genius; divest himself of all self-love; and examine if he be a true son of Apollo, and cherished by the muses: for

In vain, rash author, dost thou strive to climb,
By lofty verse, Parnassus' height sublime,
If heaven does not by secret powers inspire,
Or if thy natal star darts not poetic fire.

17
Imagination, what.

This precept, with regard to poetry in particular, is applicable to all the polite arts in general; for their most happy success is founded on *imagination*. By this term we understand, in general, a faculty of the mind, a particular genius, a lively invention, a certain subtle spirit, which gives a facility in discovering something new. But it is necessary also to prescribe just bounds to this term *new*, which must not be here taken in an absolute sense. Solomon wisely remarks, that, even in his time, *there was nothing new under the sun*. In fact, all that exists, and all that is capable of being discovered in the known world, has already been discovered. The fine arts in their imitations of nature, in their expressions, can borrow images, figures, comparisons, from those things only that exist and are known. As there have been from the beginning of the world to our days, millions of authors in each of the polite arts, almost all the possible combinations of the various subjects have been produced by their lively imaginations; and when we hear the ignorant part of mankind talk of a work of wit or of art that is entirely new, that offers ideas which were before utterly unknown, that had never entered into the brain of any other man, we should refer such assertions to the class of popular errors; and reflect on those stories we every day hear of certain empirics, who pretend to be alone possessed of marvellous methods of cure by means of simples; as if there were any plant, any stalk

18
Novelty and Invention.

of grass that grows in our world, that can have escaped the researches of botanists. But the novelty, of which we here speak, consists in the ingenious use of combinations of all the various objects of nature, that are new, happy, and agreeable, that have not yet been exhausted, and which appear even to be inexhaustible; and of the use which the artist makes of all new discoveries, which he turns to his advantage, by a judicious application. Invention therefore supposes a considerable fund of preliminary knowledge, such as is capable of furnishing ideas and images, to form new combinations. But there is no art by which invention itself can be produced: for that, as we have already said, is the gift of heaven; and it is an endowment which we cannot even make use of whenever we please. We would rather say, therefore, that invention consists in producing, in works of genius, *that which is unexpected*; an object, a harmony, a perfection, a thought, an expression, of which we had no idea, that we could not foresee, nor hope to find, where the artist has so happily placed it, and where we perceive it with delight. This idea appears applicable to such of the polite arts as affect the mind by the hearing as well as by the sight; and it is a matter that is highly essential.

The second rule is, That every artist ought incessantly to labour in the improvement of his *taste*; in acquiring that sensible, refined, and clear discernment, by which he will be enabled to distinguish the real beauties in each object, the ornaments that are agreeable to it, and the proportions and relations that subsist among the several parts: and by this faculty, he will be regulated in the employment of his natural talents. This labour consists not only in the profound reflections he will make on the properties of objects as they relate to the fine arts, but also in a constant, assiduous study of the grand models of beauty.

The third rule to be observed in the practice of the polite arts, is *the imitation of nature*. Every object in the universe has its peculiar nature, of which the artist should never lose sight in his manner of treating it. In vain will he otherwise ornament his work with the most refined and most brilliant strokes; for if nature be not justly imitated, it will for ever remain imperfect. The sublime Homer has sometimes sinned against this rule: for, as the gods have a nature peculiar to themselves, it cannot be a just imitation when we attribute to them passions that are scarce pardonable in mortals, and make them frequently converse in a language that is at once vulgar and ridiculous. It was not to imitate nature, to put into the mouth of a hero, at the moment of a decisive battle, an harangue that must become tedious by its excessive length, and which certainly could not have been heard by the thousandth part of a numerous army: but we have already touched upon some of the faults that are strewed over the poems of that great man; to multiply or dwell upon them would be ungrateful. We must, however, observe that this imitation of nature, which appears at first view so simple and so easy, is of all things the most difficult in practice; and that it requires a discernment so sagacious, and an expression so happy, as is rarely bestowed by heaven on mortal man.

Perspicuity forms the fourth rule of expression. In all the fine arts, in general, an obscure, perplexed, ambiguous, and elaborate expression, is always bad. The true

Art.

19
2d Rule, Improvement of taste.

20
3d, Imitation of nature.

21

4th, Perspicuity.

Art
||
Artaba.

true striking beauty must be manifest and perceptible to the most ignorant of mankind as well as the most learned. Those are ever false or inferior beauties that have occasion for a covering, a kind of veil that may make them appear greater than they really are: true beauty wants no veil, but shines by its native lustre. From the union of the true imitation of nature with perspicuity of expression arises that *truth* which is so essential in the productions of the fine arts.

22
6th, Eleva-
tion of sen-
timent.]

In all the polite arts, and in all the subjects they embrace, there must necessarily reign an elevation of sentiment, that expresses each object in the greatest perfection of which it is susceptible; that imitates nature in her most exalted beauty. This makes the fifth general rule. The design of the fine arts being to excite pleasure by the expression of that which is beautiful, every artist should raise himself above his subject; and, choosing the most favourable light wherein to place it, should there embellish it with the greatest, most noble, and beautiful ornaments, that his own genius can suggest; still, however, observing a strict imitation of nature.

23
6th, The
sublime to
be endea-
voured af-
ter.

From the observation of these two last rules results the *sublime*, which is the union of the greatest perspicuity with the strictest truth and most exalted elevation possible. It is necessary to remark here, that the most simple and common subjects are susceptible of a sublime that is agreeable to their nature. An idyl or landscape may be as sublime in their kinds as an epic poem or a history-piece. When Moses begins the book of Genesis with these words, *In the beginning God created the heaven and the earth*; or when he tells us, that God said, *Let there be light, and there was light*; these expressions are sublime in the highest degree, because they are perfectly clear, true, and elevated. Every author should therefore endeavour after the sublime † in every subject that he undertakes; and this makes the sixth and last general rule in the practice of the polite arts. But if he cannot attain to this, it is, however, indispensably necessary that he constantly make use of expressions that are *noble and refined*. Every thing that is *low, indecent, or disagreeable*, is naturally repugnant to the sublime, and ought to be for ever banished from all works that proceed from the noble and liberal arts.

† See the
article
GRAN-
DEUR and
Sublimity.

ART is also an appellation given to several superstitious practices; as, *St Anselm's art, St Paul's art, &c.*

Art and Part, in Scots law. See ACCESSORY.

ARTA, by some called *Larta*, a town of Lower Albania, in Turkey in Europe, with a Greek archbishop's see. It is a pretty large town, and contains about 7 or 8000 inhabitants, Greeks and Turks, but the former are the most numerous. The cathedral has as many windows and doors as there are days in the year. It is supported by above 2000 marble pillars; and was built by Michael Ducas Commeno emperor of Constantinople, as appears by an inscription over the great door. It carries on a considerable trade, particularly in tobacco and furs. E. Long. 31. 30. N. Lat. 39. 28.

ARTABA, an ancient measure of capacity used by the Persians, Medes, and Egyptians.

The Persian artaba is represented by Herodotus as bigger than the Attic medimnus by three Attic chœ-

nixes: from which it appears that it was equal to $6\frac{1}{2}$ Artabanus Roman modii; consequently that it contained $166\frac{1}{2}$ pounds of wine or water, or $126\frac{1}{2}$ pounds of wheat. The Egyptian artaba contained five Roman modii, and fell short of the Attic medimnus by one modius; consequently held $133\frac{1}{2}$ pounds of water or wine, 100 pounds of wheat, or 60 of flour.

Artabanus
||
Artemido-
rus.

ARTABANUS, the name of several kings of Parthia. See PARTHIA.

ARTABAZUS, the son of Pharnaces, commanded the Parthians and Chorasmians in the famous expedition of Xerxes. After the battle of Salamis, he escorted the king his master to the Hellespont with 60,000 chosen men; and after the battle of Plataea, in which Mardonius engaged contrary to his advice, he made a noble retreat, and returned to Asia with 40,000 men under his command.

ARTAXATA, *orum*, the royal residence and metropolis of Armenia Major (Strabo, Pliny, Juvenal), and built according to a plan of Hannibal, for King Artaxias, after whom it was called. It was situated on an elbow of the river Araxes, which formed a kind of peninsula, and surrounded the town like a wall, except on the side of the isthmus, but this side was secured by a rampart and ditch. This town was deemed so strong, that Lucullus, after having defeated Tigranes, durst not lay siege to it; but Pompey compelled him to deliver it up without striking a blow. It was then levelled with the ground; but the Armenians have a tradition, that the ruins of it are still to be seen at a place called *Ardachat*. Sir John Chardin says, that it has the name of *Ardachat* from Artaxias, whom in the East they call *Ardechier*. Here are the remains of a stately palace which the Armenians take to be that of Tiridates who reigned in the time of Constantine the Great. One front of this building is but half ruined, and there are many other fine antiquities which the inhabitants call *Tat. Tradat*, that is, the throne of Tiridates. Tavernier also mentions the ruins of Artaxata between Erivan and mount Ararat, but does not specify them. The ancient geographers mention another city of the same name, likewise situated on the Araxes, but in the northern part of Media, known among the ancients by the name of *Atropatia*.

ARTAXERXES, the name of several kings of Persia. See PERSIA.

ARTEDIA: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellatae*. The involucra are pinnatifid; the floscules of the disc are masculine; and the fruit is hispid with scales.—There is but one species, the *squamata*, with squamose seeds, a native of the East: Rewvolf found it growing on mount Libanus. It is an annual plant, whose stalks rise about two feet high, sending out a few side-branches, which are garnished with narrow compound leaves, resembling those of dill; the extremity of the stalk is terminated by a large umbel of white flowers, composed of five unequal petals. These are succeeded by roundish compressed fruit, each having two seeds, whose borders are scaly.

ARTEMIDORUS, famous for his Treatise on Dreams. He was born at Ephesus, but took upon him the surname of *Daldianus* in this book, by way of respect to his mother's country Daltis. He styled him-

self

Artemisia. self the *Ephesia* in his other performances. He not only bought up all that had been written concerning the explication of dreams, which amounted to many volumes; but he likewise spent many years in travelling, in order to contract an acquaintance with fortune-tellers: he also carried on an extensive correspondence with all the people of this sort in the cities and assemblies of Greece, Italy, and the most populous islands; collecting at the same time all the old dreams, and the events which are said to have followed them. The work which he wrote on dreams consisted of five books: the first three were dedicated to one Cassius Maximus; and the last two to his son, whom he took a good deal of pains to instruct in the nature and interpretation of dreams. This work, though filled with frivolous observations, contains some things that are interesting. It was first printed in Greek at Venice in 1518; and Rigaltius published an edition at Paris, in Greek and Latin, in 1603, and added some notes. Artemidorus wrote also a treatise upon Auguries, and another upon Chiromancy; but they are not extant. He lived under the Emperor Antoninus Pius.

ARTEMISIA, wife of Mausolus king of Caria, has immortalized herself by the honours which she paid to the memory of her husband. She built for him in Halicarnassus a very magnificent tomb, called the *Mausoleum*, which was one of the seven wonders of the world, and from which the title of *Mausoleum* was afterwards given to all tombs remarkable for their grandeur; but she died of regret and sorrow before the *Mausoleum* was finished. She appointed panegyrics to be made in honour of him, and proposed a prize of great value for the person who should compose the best. He died about the end of the 106th Olympiad, 351 years before the Christian era.

ARTEMISIA, queen of Caria, and the daughter of Ligdamis, marched in person in the expedition of Xerxes against the Greeks, and performed wonders in the sea-fight near Salamis, 480 years before the Christian era. Being pursued by an Athenian vessel, she attacked one of the Persian ships, commanded by Demasithymus, king of Calyndus, her enemy, and sunk it; on which the Athenians, thinking that her ship was on the side of the Greeks, ceased their pursuit: but Xerxes was the principal person imposed upon in this affair; for believing she had sunk an Athenian vessel, he declared, that "the men had behaved like women, and the women like men." Xerxes intrusted her with the care of the young princes of Persia, his sons, when, agreeably to her advice, he abandoned Greece, in order to return to Asia. These great qualities did not secure her from the weakness of love: she was passionately fond of a man of Abydos, whose name was Dardanus, and was so enraged at his neglect of her, that she put out his eyes while he was asleep. The gods, in order to punish her for this, inspired her with a still stronger passion for him; so that the oracle having advised her to go to Leucas, which was the usage of desperate lovers, she took the leap from thence, and was interred at that place.—Many writers confound this Artemisia with the former, the wife of Mausolus.

ARTEMISIA, *Mugwort*, *Southernwood*, and *Wormwood*: A genus of the polygamia superflua order, belonging to the syngenesia class of plants; and in the

natural method ranking under the 49th order, *Compositae-nucamentaceae*. The receptacle is either naked or a little downy; it has no pappus; the calyx is imbricated with roundish scales; and the corolla has no radii.—The

Species are 23; of which the most noted are the following. 1. The vulgaris, or common mugwort, grows naturally on banks and by the sides of foot-paths in many parts of Britain; so is seldom admitted into gardens, where it would prove a troublesome weed, as it spreads very fast by its creeping roots. It flowers in June, at which time the plant is ready for use. 2. The dracunculus, or tarragon, which is frequently used in salads, especially by the French, is a very hardy plant, and spreads greatly by its creeping roots. 3. The abrotanum, or southernwood, which is kept in gardens for the sake of its agreeable scent, is a low shrub, seldom rising more than three or four feet high, sending out lateral shrubby branches, growing erect, garnished with five bristly leaves, having an agreeable scent when bruised: the flowers are produced in spikes from the extremity of the branches; but unless the autumn proves warm, they seldom open in England. 4. The fantonicum produces the semen fantonicum, which is much used for worms in children. It grows naturally in Persia, from whence the seeds are brought to Europe. It hath the appearance of our wild mugwort; the branches are slender, erect, and garnished with linear winged leaves, and terminated by recurved slender spikes of flowers which have naked receptacles. 5. The artemisia maritima, or sea-wormwood, grows naturally on the sea-coasts in most parts of Britain, where there are several varieties, if not distinct species, to be found. These are low under shrubs, most of which creep at the root, by which they multiply greatly in their natural situation, but when transplanted into gardens seldom thrive so well. 6. The pontica, or pontic wormwood, commonly called *Roman wormwood*, is a low herbaceous plant, whose stalks die in autumn, and new ones appear in the spring. These are garnished with finely divided leaves, whose under-sides are woolly; and the upper part of the stalks are furnished with globular flowers which nod on one side, having naked receptacles. These appear in August, but are rarely succeeded by seeds in Britain. 7. The absinthium, or common wormwood, grows naturally in lanes and uncultivated places, and is too well known to require any particular description. 8. The arborescens, or tree-wormwood, grows naturally in Italy and the Levant near the sea. It rises, with a woody stalk, six or seven feet high, sending out many ligneous branches, garnished with leaves somewhat like those of the common wormwood, but more finely divided, and much whiter. The branches are terminated by spikes of globular flowers in the autumn, which are seldom succeeded by seeds in this country.

Culture. The southernwood is propagated by slips or cuttings planted in a shady border about the beginning of April, observing to water them duly in dry weather. In this border they may remain till the following autumn, when they should be transplanted, either into pots or those parts of the garden where they are to remain. The fantonicum is likewise propagated by slips: but the plants should be placed in a dry soil and sheltered situation, where they will endure the cold

of

Artemisia. of our ordinary winters pretty well; though it will be proper to have a plant or two in pots, which may be sheltered under a common hot-bed frame in winter, to preserve the species. The true wormwood is easily propagated in the same manner. The cuttings must be planted in a shady border, and duly watered during the summer season, in which case they will take root freely. In autumn some of the young plants should be potted, that they may be sheltered in winter; the others may be planted in a warm border, where they will live, provided the winter proves favourable. The other sorts spread by their creeping roots; and require no culture, as they are very hardy, and will thrive any where.

Medicinal Uses. The seeds of the *fantonicum* are small, light, chaffy, composed as it were of a number of thin membranous coats, of a yellowish colour, an unpleasant smell, and a very bitter taste. They are celebrated for anthelmintic virtues (which they have in common with other bitters), and are sometimes taken in this intention, either along with melasses or candied with sugar. They are not very often met with genuine in the shops. The leaves of the sea, common, and Roman wormwoods, are used as stomachics, but are all very disagreeable: the Roman is the least so, and therefore is to be preferred; but the other two kinds are generally substituted in its place. The distilled oil of wormwood is sometimes made use of to rub on the belly as a cure for worms.

The leaves of the *vulgaris*, or common mugwort, have a light aromatic smell, and an herbaceous bitterish taste. They were formerly celebrated as uterine and antihysterical; an infusion of them is sometimes drank, either alone or in conjunction with other substances, in suppression of the menstrual evacuations. This medicine is certainly a very mild one, and considerably less hot than most others to which these virtues are attributed. In some parts of this kingdom, mugwort is of common use as a pot-herb. It is now, however, very little employed in medicine; and it is probably with propriety that the London College have rejected it from their pharmacopœia.

The moxa, so famous in the eastern countries for curing the gout by burning it on the part affected, is the lanugo or down growing on the under side of the leaves of a species of mugwort, supposed to be the same with our common sort. From some dried samples of this plant which were brought over to this country, Mr Miller reckons them to be the same, differing only in size; in which the East Indian kind is inferior to ours. He supposes that the lanugo of our mugwort would be equally efficacious. But according to Abbé Grosier, "the leaves are more deeply indented than those of the common kind; it is also softer, and of a more silky texture. The ancient Chinese made great use of it in medicine. In all the northern provinces, the principal remedy for most diseases consisted in making deep punctures in the body, upon which small balls of the down of this plant were burnt. These punctures were made with needles of gold or steel, without drawing blood; and all the skill required in the physician, was to determine their number and depth, and where it was necessary to make them. It was necessary that the down of the mugwort should be very old; and, as every kind of fire was not proper

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for lighting the salutary balls, they employed mirrors made of ice or metal. "They caused the water to freeze (says the ancient text) in a round convex vessel; and the ice being presented to the sun, collected its rays, and set fire to the down of the plant." The literati are not at present agreed whether the secret of curing diseases by punctures be preserved; but these downy balls are still used instead of cupping glasses in apoplectic and lithargic cases. Girdles made of this down are also recommended for the sciatica, and those afflicted with the rheumatism in their legs are advised to quilt their stockings with it. The mugwort destined for this purpose is gathered only in autumn; and care must be taken to pick that which has the shortest and softest down.

"In China, the juice of the common mugwort, when green, is used to stop spitting of blood: and the seeds are employed for the same purpose. The dose of the latter is divided into two parts: one of which is reduced to ashes, and put into water in which the other has been boiled. These ashes, it is said, when taken as snuff, immediately stop bleedings of the nose. The Chinese prescribe this plant also with success for dysenteries which proceed from weakness, and for pleurisy, and disorders of the stomach. An infusion of the stalks and buttons of mugwort is recommended to old people instead of tea.—Mugwort was formerly considered there as a powerful preservative against witchcraft. The ancient books relate, that, in the third century of the Christian æra, it was customary for people to gather this plant before sun-rise, and to suspend it afterwards over their doors. The poets of the seventh century mention this custom, and describe the manner in which the streets of the capital were ornamented with it on the fifth day of the fifth moon; that is to say, about midsummer.

"Of a species which bears prickles on the edges of its leaves, the leaves, when dried, are beaten with a wooden bat until the soft part is entirely separated from the fibres; and after they have been dipped in water mixed with saltpetre, they are used for tinder; no other kind is known at Pe-king; and it is equal to that of Europe. It appears that the ancient Chinese made use of the soft part of this plant for quilting, for making mattresses, and even for cloth. They also employed it for manufacturing a kind of paper."

ARTEMISIUM (anc. geog.) a promontory on the north-east of Eubœa (called *Leon* and *Cale Aste* by Ptolemy), memorable for the first sea-engagements between the Greeks and Xerxes.

The Grecian fleet was stationed in the harbour; while that of the Persians, too numerous for any harbour to contain, had anchored in the road that extends between the city of Castanæa and the promontory of Sepias, on the coast of Thessaly.

The first line of their fleet was sheltered by the coast of Thessaly; but the other lines, to the number of seven, rode at anchor, at small intervals, with the prows of the vessels turned to the sea. When they adopted this arrangement, the waters were smooth, the sky clear, the weather calm and serene: but on the morning of the second day after their arrival on the coast, the sky began to lour; the appearance of the heavens grew threatening and terrible; a dreadful storm succeeded; and for three days raged with unabating fury. Four hundred galleys were destroyed by its violence, besides a

3 A

vast

Artemisia,
Artemi-
sium.

Artemi-
sium.From Gil-
lies's History
of Greece.

vast number of storeships and transports. Eight hundred ships of war, however, besides innumerable vessels of burden, sailed into the Pegasean bay, and anchored in the road of Apheté, which, at the distance of a few miles, lies directly opposite to the harbour of Artemisium.

The Grecians had posted centinels on the heights of Eubœa to observe the consequences of the storm, and to watch the motions of the enemy. When informed of the disaster which had befallen them, they poured out a joyous libation, and sacrificed, with pious gratitude, to "Neptune the Deliverer."

The Persians, however, having recovered from the terrors of the storm, prepared for battle; and as they entertained not the smallest doubt of conquering, they detached 200 of their best sailing vessels round the isle of Eubœa, to intercept the expected flight of the enemy through the narrow Euripus.

About sun-set the Grecian fleet approached in a line; and the Persians met them with the confidence of victory, as their ships were still sufficiently numerous to surround those of their opponents. At the first signal the Greeks formed into a circle, at the second they began the fight. Though crowded into a narrow compass, and having the enemy on every side, they soon took 30 of their ships, and sunk many more. Night came on, accompanied with an impetuous storm of rain and thunder; the Greeks retired into the harbour of Artemisium; the enemy were driven to the coast of Thessaly.

By good fortune, however, rather than by design, the greatest part of the Persian fleet escaped immediate destruction, and gained the Pegasean bay; but the ships ordered to sail round Eubœa met with a more dreadful disaster. They were overtaken by the storm, after they had adventured further from the shore than was usual with the wary mariners of antiquity. Clouds soon intercepted the stars, by which alone they directed their course; and after continuing during the greatest part of the night the sport of the elements, they all perished miserably amidst the shoals and rocks of an unknown coast.

The morning arose with different prospects and hopes to the Persians and the Greeks. To the former it discovered the extent of their misfortunes; to the latter it brought a reinforcement of 53 Athenian ships. Encouraged by this favourable circumstance, they determined again to attack the enemy, at the same hour as on the preceding day, because their knowledge of the coast and their skill in fighting their ships rendered the dusk peculiarly propitious to their designs. At the appointed time, they sailed towards the road of Apheté; and having cut off the Cilician Squadron from the rest, totally destroyed it, and returned at night to Artemisium.—The Persian commanders being deeply affected with their repeated disasters, but still more alarmed at the much dreaded resentment of their king, they determined to make one vigorous effort for restoring the glory of their arms. By art and stratagem, and under favour of the night, the Greeks had hitherto gained many important advantages. It now belonged to the Persians to choose the time for action. On the third day at noon, they sailed forth in the form of a crescent, which was still sufficiently extensive to unfold the Grecian line. The Greeks, animated by former

success, were averse to decline any offer of battle; yet it is probable that their admirals, and particularly Themistocles, would much rather have delayed it to a more favourable opportunity. Rage, resentment, and indignation, supplied the defect of the barbarians in skill and courage. The battle was longer, and more doubtful, than on any former occasion; many Grecian vessels were destroyed, five were taken by the Egyptians, who particularly signalized themselves on the side of the barbarians, as the Athenians did on that of the Greeks. The persevering valour of the latter at length prevailed, the enemy retiring, and acknowledging their superiority, by leaving them in possession of the dead and the wreck. But the victory cost them dear; since their vessels, particularly those of the Athenians, were reduced to a very shattered condition; and their great inferiority in the number and size of their ships, made them feel more sensibly every diminution of strength.

ARTEMISIUM, a town of Oenotria, (Stephanus); now *S. Agatha*, in the Hither Calabria, on the river Pisaurus, or la Foglia, distant eight miles from the Tuscan Sea.—Another of the Contestani, in Spain, (Strabo); otherwise called *Dianium*: now *Denia*, on the sea-coast of Valencia.

ARTERIOTOMY, the opening an artery, with design to procure an evacuation of blood. See SURGERY.

ARTERY, in anatomy, a conical tube or canal which conveys the blood from the heart to all parts of the body. See ANATOMY, n° 117,—125.

ARTHRITIS, in medicine, the Gout. See the Index subjoined to MEDICINE.

ARTHRODIA, in natural history, a genus of imperfect crystals, found always in complex masses, and forming long single pyramids, with very short and slender columns.

ARTHRODIA, in anatomy, a species of articulation, wherein the flat head of one bone is received into a shallow socket in the other. The humerus and scapula are joined by this species of articulation.

ARTHUR, the celebrated hero of the Britons, is said to have been the son of Uther Pendragon king of Britain, and to have been born in 501. His life is a continued scene of wonders. It is said that he killed four hundred and seventy Saxons with his own hand in one day; and after having subdued many mighty nations, and instituted the order of the Knights of the Round Table, died A. D. 542, of wounds which he received in battle. The most particular detail of his story and his exploits is that given by Geoffrey of Monmouth: but the probable is there so blended with the marvellous and the extravagant, that not only the truth of the whole, but even the reality of Arthur's existence, has been called in question.

In this controversy, Mr Whittaker has taken much pains to vindicate the existence, and discriminate between the real and the fabulous transactions, of the British worthy. "Many of the actions (he observes) attributed to Arthur by the Welsh chronicles of Britain, are as absurd in themselves as they are spurious in their authority. Written, as those narratives were, many centuries after the facts, and being merely the authentic accounts of Arthur, embellished with the fictions and distorted by the perversions of folly; they are inconsistent equally with the state of the times, and the

Artemi-
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Arthur.

Arthur.
History of
Manchester,
vol. ii. 4to.
edit. p 31.
et seq.

the history of the continent and the island. And the ignorance of the forgers, and the credulity of their abettors, can be equalled only by the injudiciousness and incredulity of the opponents to both. If some accounts of Arthur and Cunobeline in these histories be certainly spurious, others are as certainly genuine. And the relations of Suetonius, Dio, and Nennius, are not to be rejected, because of the falsehoods which imposture has engrafted upon them, and absurdity admitted with them.

“The existence of Arthur is evinced by that of the fables, which have at once annihilated his actions and his name with the misjudging critic. And the reasoner’s own arguments really turn against himself, and demonstrate the point which they were intended to disprove. The annals of Wales have long laboured in Arthur’s commendation. The Highlanders have long had a poetical history of his exploits in their own language. The whole island is in traditionary possession of his character; and 600 or 700 places within it are still distinguished by his name.

“The genuine actions of the chief are mentioned by his own historians, with a modesty and conciseness that is no bad argument of the truth, and with a particularity of time and place that is a good evidence of the facts. They are noticed by men, whom the death of the hero had exempted from all temptation to flattery: they are recited by persons, whom a proximity to the times had precluded from all possibility of mistake: and they are attested by the best historical authority, writers who lived cotemporary with him, authors who conversed with his warriors, and historians that wrote within a few years after him. He is spoken of as the honourable father of the British heroes by the aged Llomarch, a writer actually cotemporary with him, and some time resident at his court. One of his greater actions is incidentally recorded by Taliessin, an historical bard living under Maelgwn Gwyned, who was a sovereign among the Britons in the days of Arthur, Gildas, and Llomarch. Another of his considerable exploits is casually intimated by Myrddin Wyhl or Merlinus Caledonius, who complains of the severe treatment which he himself received from Rydderch Hael, a king cotemporary with Urien Reged, and engaged with him in a war against the Saxons on the death of Ida in 560. And all his actions are particularly recited by Nennius.

“In the *Historia Britonum* of this last author, Arthur’s victories over the Saxons are thus recorded. The first battle was fought at the mouth of the river, which is denominated *Glem*. The second, third, fourth, and fifth, were upon another river, that is called *Duglas*, and lies in the region *Linuis*. The sixth was on a stream, which bears the appellation of *Baffas*. The seventh was in the wood of *Celidon*, that is, in *Cat Coit Celidon*. The eighth was at *Castle Gunnion*. And the ninth was at the city of the *Legion*. The tenth was on the bank of the river *Ribroit*; the eleventh at the hill *Agned Cathregonion*; and the twelfth at *Mount Badon*. These twelve battles of Arthur are described to us in the same manner as *Vormer’s* three. Only the general facts are mentioned, and only the common names of places are recited, in both. And from the whole air and aspect of the history, the remarkable conciseness with which the notices are given,

and the great ease with which the places are pointed out, the detail appears to have been drawn up at the distance only of a few years from the transactions, and when these little references were sufficiently understood.”

Mr Whittaker proceeds to ascertain the scenes of Arthur’s battles; after which he gives a relation of them with a surprising particularity. A severe critic might be apt to say, as Dr Kippis observes, that it requires all our faith in the author’s judgment, as well as in his ingenuity and learning, not to suspect that he sometimes allows too much scope to fancy and conjecture. However, the whole of what he hath advanced is singularly curious, and deserves peculiar attention and consideration. And no one can help admiring the penetration with which he hath formed such a regular detail of facts, from the combined aid of history, romance, and tradition. According to Mr Whittaker, Arthur’s principal exploits were against the northern Saxons, whilst he was only prince of the *Silures*, and *Ambrosius* was the dictator or pendragon of the Britons. “In a series probably of five campaigns, and in a succession certainly of eleven victories, this great commander had repelled the Saxons from the north of *Flavia*, dislodged them from all *Maxima*, and dispossessed them of all *Valentia*. And these were successes so unchequered with misfortunes, so great in themselves, and so beneficial to the public, that the name of Arthur claims the first rank in the list of military, and the better one of patriot, heroes.” The twelfth battle of Arthur was fought in the south of England, after he was elected to the pendragonship, against *Cerdic* the Saxon. “This (says Mr Whittaker) was a most extraordinary victory, and completes the circle of Arthur’s military glories.” In the author’s account of this prince’s conduct in peace, he asserts, that “Arthur saw that an appointment was wanted, which should at once be a more regular and more honourable signature of merit; by the certainty of the honour and the greatness of the dignity, call out all the worth of all the worthy in the nation; and collect it round the throne of the pendragon. Accordingly he established a military order. It was the first that had ever been instituted in the island; and it has since been imitated by all the nations on the continent. By means of this association, Arthur raised among the provincials a general glow of ingenuous heroism, the first spirit of chivalry that ever appeared in Europe; that manly and honourable gallantry of soul, which has made him and his worthies the subject of romantic histories over all the west of it. By this, and this alone, could he have been what history represents him, the Reverend Father of the British Heroes in general, even to the conclusion of the sixth century, and nearly the middle of the seventh. The order naturally survived its founder. And the members of it were denominated *the Warriors of Arthur*, though the persons were born half a century after his death.” Mr Whittaker goes on to inform us, that under the prudent management of Arthur for 20 years together, a fair prospect dawned upon the Britons, and long scenes of future glories opened to their imaginations. “But the gay vision was destroyed at once by the commencement of a civil war. Many towns still remained in ruins, the memorial of the former wars, and the disgrace of the present. The diffused spirit of chivalry was turned up-

Arthur.

Ibid.
P. 43—64.

Arthur. on the nation, and heroism became the tool of dissension. And the dreadful combination of civil evils was begun and consummated, at once, by the death of the renowned Arthur in battle. Thus died the incomparable hero in 542."

To these observations it may not be improper to add the following account of the discovery of Arthur's tomb, which appears to be tolerably well authenticated. Henry II. who was the first of the Plantagenet line, being, in the last year of his reign, at Pembroke, and hearing there a Welch bard singing to his harp the story of Arthur, concluding with an account of his death and burial in the church-yard of Glastenbury between two pyramids; the king instantly gave orders that the matter should be inquired into, and the body dug up. This was done as the king directed; and at the depth of seven feet was found a vast stone, whereon was fastened a leaden cross, with this inscription on the inside: *Hic Jacet Sepultus Inclutus Rex Arturius in Insula Avalonia*; i. e. "Here lies the famous King Arthur, buried in the isle of Avalon." Digging still lower, they found the king's body in the trunk of a tree, his beautiful queen lying by him, with long flowing hair, in colour bright as gold, which however sunk into dust when touched. The king's bones were very large sized; and in his skull there were ten wounds or more, all cicatrized, except that of which he died. This discovery was made in the year 1189, as Giraldus Cambrensis tells us, who saw these bones, and examined the whole matter carefully. There was also a table containing this story, set up in the monastery of Glastenbury, and the leaden cross with the inscription remained there till the dissolution of the monastery, where it was seen by the great antiquary Leland, but what is become of it since does not appear.

Of the different places above alluded to as being distinguished by our hero's name, and serving to evince his existence, the following may be mentioned as one of the principal.

ARTHUR'S SEAT, a high hill in the neighbourhood of Edinburgh, said to have been so denominated from a tradition that king Arthur surveyed the country from its summit, and had also defeated the Saxons in its neighbourhood. This hill rises by a steep and rugged ascent, till it terminates in a rocky point near 700 feet high from the base, being more than double the height of the cross on the top of St Paul's, London, which is 340 feet. On the south it is in many parts a perpendicular rock, composed of basaltic pillars, regularly pentagonal or hexagonal, about three feet in diameter, and from 40 to 50 feet in height. Contiguous, upon the west, and partly connected with it at the base, are Salisbury craggs, of inferior height, but exhibiting an appearance equally singular and grand. They present to the city an awful front of broken rocks and precipices, forming a sort of natural amphitheatre of solid rock; and backward from the craggy verge above, the hill forms an extensive irregular slope, the surface affording pasture to numerous flocks of sheep. The craggs, besides ores, spars, rock-plants, and here and there it is said some precious stones, afford an inexhaustible supply of granite for paving the streets and other purposes. In quarrying, a part of the craggs has been worn down into a spacious shelf, having the appearance of a lofty terrace, and stretching a considerable length. From hence is a near and distinct prospect of

the city with its environs and the adjacent country. But from the pinnacle called *Arthur's Seat* the view is more noble and extensive. The traveller may here sit and survey at his ease the centre of the kingdom, besides having a complete view of Edinburgh and its castle, on which he looks down as if seated among the clouds. In a word, the German ocean, the whole course of the Forth, the distant Grampians, and a large portion of the most populous and best cultivated part of Scotland, form a landscape sublime, various, and beautiful.

The denomination of this hill, derived as above, has been adduced as an argument against those who dispute the existence of the British Arthur. That derivation, however, though probable, is not without uncertainty. For *Arthur's Seat* is said to be derived, or rather corrupted, from *Ard Seir*, a "place or field of arrows," where people shot at a mark: And this not improperly; for among these cliffs is a dell or recluse valley, where the wind can scarcely reach, now called the *Hunter's bog*, the bottom of it being a morass. The adjacent craggs are supposed to have taken their name from the Earl of Salisbury, who in the reign of Edward III. accompanied that prince in an expedition against the Scots: Though, according to others, the genuine derivation, like that of *Arthur's Seat*, is from a Celtic word also corrupted.

ARTICHOAK, in botany. See **CINARA**.

ARTICLE, a clause or condition of a contract, treaty, &c. It is also a small part or division of a discourse, book, or writing, &c.

ARTICLE of Death, the last pangs or agony of one just expiring.

ARTICLE of Faith, is by some defined a point of Christian doctrine, which we are obliged to believe, as having been revealed by God himself, and allowed and established as such by the church.

The thirty-nine articles are founded, for the most part, upon a body of articles compiled and published in the reign of Edward VI. They were first passed in the convocation, and confirmed by royal authority in the year 1562. They were afterwards ratified anew in the year 1571, and again by Charles I. The law requires a subscription to these articles of all persons ordained to be deacons or priests, 13 El. cap. 12. of all clergymen inducted to any ecclesiastical living, by the same statute, and of licensed lecturers and curates, 13 El. cap. 12. and 13. and 14. Ch. 2. cap. 4. of the heads of colleges, of chancellors, officials and commissaries, and of school-masters. By 1 Will. and Mary, cap. 18. dissenting teachers were to subscribe all, except the 34th, 35th, and 36th, and part of the 20th (and in the case of Anabaptists, except also part of the 27th); otherwise they were exempted from the benefits of the act of toleration: But this clause was repealed in 1779 by 19. Geo. III.

ARTICLE, in grammar, denotes a particle used in most languages for the declining of nouns, and denoting the several cases and genders thereof.

The use of articles arises chiefly hence, that in languages which have no different terminations, to express the different states and circumstances of nouns, there is something required to supply that office.

The Latins have no articles; but the Greeks, and most of the modern languages, have had recourse to them, for fixing and ascertaining the vague signification of common and appellative names.

Artichoke,
Article.

Article
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Artificer.

The Greeks have their *α*, the eastern tongues their *he emphaticum*; the Italians their *il, lo, and la*. The French their *le, la, and les*. The Germans their *der, das, dat*.

The English also have two articles *a* and *the*; which being prefixed to substantives, apply their general signification to some particular things.

Some grammarians make the article a distinct part of speech; others will have it a pronoun, and others a noun adjective. See GRAMMAR.

Articles are of great service in a language, as they contribute to the more neat and precise expressing of several properties and relations, which must otherwise be lost. And hence one great disadvantage of such languages over the Latin, in that the article being either expressed or left out, makes an alteration in the sense, which the Latins cannot distinguish. Thus when the devil said to our Saviour, *Si tu es Filius Dei*, it may either be understood, "if thou art *a* son of God," or, "if thou art *the* son of God." The Italians even prefix articles to proper names, which do not naturally need any, because they themselves signify things individually. Thus they say, *il Ariosto, il Tasso, il Petrarca*. Even the French join the article to the proper names of kingdoms, provinces, &c. as *la Suede, la Normandie*. And we likewise annex it to the names of certain mountains and rivers; as *The Rhine, The Danube, The Alps, &c.*

ARTICULATE SOUNDS, are such sounds as express the letters, syllables, or words, of any alphabet or language: such are formed by the human voice, and by some few birds, as parrots, &c.

ARTICULATION, or JOINTING, is the joining of bones together. See ANATOMY, n° 46.

ARTICULATION, in botany, is the connection of parts that consist of joints or knees, such as the pods of French honey-suckles, which when ripe divide into so many parts as there are knees or joints; also those parts of plants which swell into nodes or joints, and which usually send forth branches.

ARTIFICER, a person whose employment it is to manufacture any kind of commodity, as in iron, brass, wool, &c. such are smiths, braziers, carpenters, &c. The Roman artificers had their peculiar temples, where they assembled and chose their own patron, to defend their causes: they were exempted from all personal services. Taruntinus Paternus reckons 32 species of artificers, and Constantine 35, who enjoyed this privilege. The artificers were incorporated into divers colleges or companies, each of which had their tutelary gods, to whom they offered their worship. Several of these, when they quitted their profession, hung up their tools, a votive offering to their gods. Artificers were held a degree below merchants, and *argentarii* or money-changers, and their employment more sordid. Some deny, that in the earliest ages of the Roman state artificers were ranked in the number of citizens: others, who assert their citizenship, allow that they were held in contempt, as being unfit for war, and so poor that they could scarce pay any taxes. For which reason they were not entered among the citizens in the censor's books; the design of the census being only to see what number of persons were yearly fit to bear arms, and to pay taxes towards the support of the state. It may be added, that much of the artificers business was

done by slaves and foreigners, who left little for the Romans to mind but their husbandry and war. By means of the arts, the minds of men are engaged in inventions beneficial to the whole community; and thus prove the grand preservative against the barbarism and brutality, which ever attend on an indolent and inactive stupidity.

By the English laws, artificers in wool, iron, steel, brass, or other metal, going out of the kingdom into any foreign country without licence, are to be imprisoned three months, and fined in a sum not exceeding one hundred pounds. And such as going abroad, and not returning on warning given by our ambassadors, &c. shall be disabled from holding lands by descent or devise, from receiving any legacy, &c. and be deemed aliens. Stat. 5. Geo. I. cap. 27. By 23 Geo. II. cap. 13. § 1. penalty is also inflicted on seducing artificers to go abroad. Ramazini has a treatise on the diseases of artificers.

ARTIFICIAL, in a general sense, denotes something made, fashioned, or produced by art, in contradistinction from the productions of nature.

ARTIFICIAL is also frequently used for factitious. Thus we have artificial sal ammoniac, artificial borax, &c.

ARTIFICIAL Fire-works are compositions of inflammable materials, chiefly used on solemn occasions, by way of rejoicing. See PYROTECHNY.

ARTIFICIAL Lightning. See ELECTRICITY and LIGHTNING.

ARTIFICIAL Lines, on a sector or scale, are certain lines so contrived, as to represent the Logarithmic sines and tangents; which, by the help of the line of numbers, will solve all questions in trigonometry, navigation, &c. pretty exactly.

ARTIFICIAL Magnets. See MAGNETS.

ARTIGI, indeclinable, (Pliny); *Artigis*, (Ptolemy); a town of the Turduli, in Bætica. Now *Albama*.

ARTILLERY, in its general sense, denotes the offensive apparatus of war, particularly of the missile kind. Among the French the term was anciently appropriated to ARCHERY. In its modern acceptation it signifies fire arms, mounted on their carriages and ready for action, with their balls, their bombs, their grenades, &c.

If we take the term in a more extensive meaning, it includes the powder, the matches, instruments for fire-works, the utensils of ordnance, the machines which facilitate their motion and transport them, the vehicles over which they traverse rivers, every thing necessary to them, and all that enters into the form of a train of artillery.

The same word still farther extended in its meaning, likewise comprehends the men destined for the service of the *artillery*; the people who provide the artillery with materials and implements when engaged, the cannoniers, the bombadiers, the officers of every rank, and engineers of every kind.

By *artillery* is likewise understood the science which the officers of artillery ought to possess. This science teaches to know the nature of all the materials and ingredients which enter into the composition and the structure of every thing relative to the artillery, such as, nitre, sulphur, charcoal; the properties of air and fire;

Artificial
||
Artillery.

Artillery. fire; the composition and preparation of gun-powder; the materials for fire works; the construction, proportions, &c. of the different warlike machines; the arrangement, movement, and whole management, of cannon, &c. in the field or in sieges, in such a manner, that each of them, according to the length of its tube and the diameter of its bore, may be situated in the best place and at the properest distance for execution, and that the whole train taken together may reciprocally assist and support each other with the greatest advantage.

Artillery has undergone many changes from its origin to the present time. The artillery of the ancients were the catapultæ, the balistæ, the different kinds of slings, &c. In latter ages, the Franks used the hatchet as a missile weapon, throwing it in the same manner as the Americans do theirs called the *tomahawk*. The Gascons and Genoese were excellent cross bow-men. The Swifs owed their victories to their strength and skill in the use of the pike, halberd, and espadon, or two handed sword; and the victories of Cressy, Poitiers, and Agincourt, will occasion the valour and skill of the English archers to be transmitted down to latest posterity. See ARCHERY.

The chevalier Folard was extremely attached to the ancient machines first mentioned, and seemed even to prefer them to our fire-arms: an opinion which must appear not a little extraordinary from such a person. Father Daniel might well be mistaken in the comparison which he made between the effects of ancient and modern artillery, and in his conclusion that the latter was of little use: the situation of this good father removed him from the scenes of war and the opportunities of military experience. But it is astonishing, that one so learned in the military art as the commentator of Polybius, who had ocular demonstration of the success of modern artillery, should have declared so violently against it. Whatever be the case with these authors and their maxims, it may be asserted, that cannon is one of the most singular discoveries which have been made amongst men; and by little and little it has changed the whole art of war, and of consequence influenced the whole system of policy in Europe. The æra of artillery is dated from the battle of Cressy in 1346, because it is only from that day that cannons were mentioned in battle. Edward III. of England successfully employed some pieces of artillery placed in the front of his army. The invention of artillery was then known in France as well as in England; but probably Philip VI. marched with so much hurry and precipitation to attack his enemy, that he left his cannon as useless incumbrances behind him. The ignorance of that age in mechanical arts considerably retarded the progress of artillery; and that of which they were then possessed was so unwieldy and imperfect, that they could not possibly discern its importance and efficacy in practice.

After the invention of gun-powder, the Spaniards were the first who armed part of their foot with muskets and harquebusses, and mixed them with the pikes. In this they were soon imitated by most other nations; though the English had not entirely laid aside their favourite weapon the long-bow, and generally taken to the use of fire-arms, during the reign of Queen Elizabeth.

The first muskets were very heavy, and could not be

fired without a rest: they had matchlocks, and barrels of a wide bore, that carried a large ball and charge of powder, and did execution at a great distance. The musketeers on a march carried only their rests and ammunition, and had boys to bear their muskets after them, for which they were allowed great additional pay. They were very slow in loading, not only by reason of the unwieldiness of the pieces, and because they carried the powder and balls separate, but from the time it took to prepare and adjust the match; so that their fire was not near so brisk as ours is now. Afterwards a lighter kind of matchlock-musket came into use; and they carried their ammunition in bandeliers, which were broad belts that came over the shoulder, to which were hung several little cases of wood covered with leather, each containing a charge of powder; the balls they carried loose in a pouch, and they had also a priming-horn hanging by their side. Matchlocks were, about the beginning of this century, universally disused in Europe, and the troops were armed with firelocks; to which, much about the same time, the bayonet being added, pikes also were laid aside; which latter change, whether it was for the better or not, is a point that still admits of dispute among the best military writers, who are divided in their opinions about it, though most of them disapprove of it.

The old English writers call those large muskets *calivers*; the harquebuss was a lighter piece, that could be fired without a rest. The matchlock was fired by a match, fixed by a kind of tongs in the serpentine or cock, which by pulling the trigger was brought down with great quickness upon the priming in the pan, over which there was a sliding cover, which was drawn back by hand, just at the time of firing. There was a great deal of nicety and care required to fit the match properly to the cock, so as to come down exactly true on the priming, to blow the ashes from the coal, and to guard the pan from the sparks that fell from it: a great deal of time was also lost in taking it out of the cock, and returning it between the fingers of the left-hand, every time that the piece was fired; and wet weather often rendered the matches useless. However, most writers allow that they were very sure, and less apt to miss fire than the firelock.

The firelock is so called, from producing fire of itself, by the action of the flint and steel. The most ancient invention of this sort is the wheel-lock, which we find mentioned in Luigi Collado's Treatise of Artillery, printed at Venice, 1586, as then lately invented in Germany. This sort of lock was used till within these hundred years, especially for pistols and carbines. It was composed of a solid steel wheel, with an axis, to which was fastened a chain, which, by being round, it drew up a very strong spring; on pulling the trigger, the spring acting, whirled the wheel about with great velocity, and the friction of the edge of it (which was a little notched) against the stone produced the fire; the cock was made so as to bring the stone upon the edge of the wheel, part of which was in the pan, and touched the priming; they used any common hard pebble for that purpose, which served as well as flint.

These locks were inconvenient, took time to wind up (or span, as they termed it), and sometimes would not go off; an instance of which may be seen in Ludlow's Memoirs.

When

Artillery.

When the firelock, such as we now use, was invented, we cannot ascertain: it is called by writers of about the middle of the last century, a *snaphane* or *snaphance*, which being the Dutch word for a *firelock*, seems to indicate that it is a Dutch invention, and that we took it from them. But Ward, in his *Animadversions of War*, printed in 1639, p. 502, after describing the exercise of the firelock, pistol, and carbine (by which he means the wheel-lock), says, that as most of our pieces go with English locks, which differ from firelocks, he shall add the method of handling them; and then gives the exercise of the snaphine carbine; by which it appears, that there was little or no difference between that and the pieces now in use. The more modern writers call it a *fusée*, from the French word *fusil*; whence the name of fusileers is still continued to several of our regiments, which were the first that were armed with them on the disuse of matchlocks.

They used the musket and rest in England so late as the beginning of the civil wars, as may be seen in Col. Bariffe's *Young Artillery Man*, printed at London, 1643.

Figueria, in his embassy in 1518, relates, that the Persians would neither make use of infantry nor of artillery, because by them the impetuosity of attack and the facility of retreat were equally incumbered and retarded: in these expedients alone their address and their glory consisted. This method of advancing and recalling is widely different from the present conduct of war, as the artillery in armies is now prodigiously multiplied, and must be transported to every place where any body of troops whatever is destined to operate.

The length and diameter of cannon has been much diminished, which must likewise proportionably diminish their weight. It is by long practice and experience that they have discovered how much might be deduced from their magnitude in both these respects with propriety, without hurting the grand effects which, on some occasions, it is necessary they should produce, by rendering them more easy to be wielded, which was the advantage pursued by lessening their size. See further the articles CANNON, GUNNERY, and PROJECTILES.

Improvements, however, are still making, and will probably long continue to be made, in these ignivorous machines that mock the thunder; which, though they seem to be invented for the destruction of the human race and the subversion of empires, have yet by their effects rendered war less savage and less sanguine: political alliances have been more successfully conciliated among all nations, conquests are become less frequent and less rapid, and successes in war have been more easily reduced to calculation.

The change introduced in the military art by the modern artillery, Dr Smith observes, has enhanced greatly both the expence of exercising and disciplining any particular number of soldiers in time of peace, and that of employing them in time of war. Both their arms and their ammunition are become more expensive. A musket is a more expensive machine than a javelin or a bow and arrows; a cannon or a mortar, than a balista or a catapulta. The powder which is spent in a modern review is lost irrecoverably, and occasions a very considerable expence. The javelins and arrows which were

thrown or shot in an ancient one, could easily be picked up again, and were besides of very little value. The cannon and the mortar are not only much dearer, but much heavier machines than the balista or catapulta, and require a greater expence not only to prepare them for the field, but to carry them to it. As the superiority of the modern artillery too, over that of the ancients is very great, it has become much more difficult, and consequently much more expensive, to fortify a town so as to resist even for a few weeks the attack of that superior artillery.

In modern war the great expence of fire-arms gives an evident advantage to the nation which can best afford that expence; and consequently, to an opulent and civilized, over a poor and barbarous nation. In ancient times, the opulent and civilized found it difficult to defend themselves against the poor and barbarous nations. In modern times, the poor and barbarous find it difficult to defend themselves against the opulent and civilized. The invention of fire-arms, an invention which at first sight appears to be so pernicious, is certainly favourable both to the permanency and to the extension of civilization.

It has to many appeared matter of surprise, that the battles of the ancients should be described with an order, perspicuity, and circumstantial minuteness, which are not to be found in the military writers of modern times. Scholars have endeavoured to explain this difference, by observing the immense disproportion, in point of dignity and abilities, between the military historians of modern Europe and those of Greece and Rome. But the difficulty will be better solved, Dr Gillies thinks, by reflecting on the changes introduced into the art of war by the change of artillery; which in military operations, form the pivot on which the whole turns. 1. From the nature of fire-arms, modern battles are involved in smoke and confusion. 2. From the same cause, modern armies occupy a much greater extent of ground, and begin to act at much greater distances; which renders it more difficult to observe and ascertain their manœuvres. 3. The immense train of artillery, ammunition, &c. required in the practice of modern war, gives a certain immobility to our armies, which renders it impossible to perform, without great danger, those rapid evolutions in sight of an enemy, which so often decided the battles of the ancients. With us, almost every thing depends on the judicious choice of ground, a matter requiring great military genius, but not admitting the embellishments of historical description.

In the battles of the Greeks and Romans, the extraordinary disproportion between the numbers slain on the side of the victors and the vanquished has been observed as another remarkable circumstance. But this necessarily resulted from the nature of their arms. Their principal weapons being not missile, but manual, armies could not begin to act till they had approached so nearly to each other, that the conquered found themselves cut off from all possibility of retreat. In modern times such consequences seldom take place. The use of fire-arms (which often renders the action itself more bloody) furnishes the defeated party with various means of retreating with considerable safety. The sphere of military action is so widely extended in modern times, that before the victors can run over the space which se-

Artillery.

Artillery,
Artobriga.

parates them from the vanquished, the latter may fall back, and proceed with little loss beyond their reach; and should any village, hedge, ravine, &c. be found in their way, may often check the ardour of the pursuers. Upon these considerations, the invention of gun-powder and modern artillery may be said to have saved the effusion of human blood. Equestrian engagements (since the principles on which cavalry act remain nearly the same in every age) are still distinguished by similar circumstances to those which appear so extraordinary in the battles of antiquity.

ARTILLERY-Park, the place in the rear of both lines in the army, for encamping the artillery, which is drawn up in lines, of which one is formed by the guns; the ammunition waggons make two or three lines, 60 paces behind the guns, and 30 distant from one another; the pontoons and tumbrils make the last line. The whole is surrounded with a rope which forms the park: the gunners and matrosses encamp on the flanks; and the bombardeers, pontoon-men, and artificers, in the rear.

ARTILLERY-Train, a certain number of pieces of ordnance mounted on carriages, with all their furniture fit for marching.

ARTILLERY-Company, a band of infantry, consisting of 600 men, making part of the militia or city-guard of London.

ARTIST, in a general sense, a person skilled in some art. Mr Harris defines an artist to be, "A person possessing an habitual power of becoming the cause of some effect, according to a system of various and well-approved precepts." See **ART**.

* *Evel*, Dis-
course of
medals,
p. 237, &c.

We are told * of a privilege granted at Vicenza to artists, like that of *clergy* in England: in virtue thereof, criminals adjudged to death save their lives if they can prove themselves the most excellent and consummate workmen in any useful art. This benefit is allowed them *in favorem artis*, for the first offence, except in some particular crimes, of which coining is one; for here the greater the artist, the more dangerous the person.

ARTIST (*Artista*), in an academical sense, denotes a philosopher or proficient in the faculty of arts.

In the early ages of universities, the seven liberal arts completed the whole course of study, or philosophy, as it was called: whence the masters of this faculty were denominated *Artists*. What they understood by the liberal arts used to be summed up in the following Latin verse:

Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Astra.

ARTIST is more peculiarly used, by Paracelsus and other adepts, for a chemist or alchemist.—We find frequent mention, in authors of this class, of Elias Artista, or Elias the artist, who is to come some time before the dissolution of the world, and restore and make perfect all arts and sciences, but especially the gold-making art; and usher in a truly golden age, or millennium. The lower and meaner things in this sublime art, Paracelsus observes, God has permitted to be already discovered: but for the greater and more important matters, as the transmutation of other metals into gold, they are reserved to the coming of Elias the artist.

ARTOBRIGA, a town of Vindelicia (Ptolemy):

Now *Altzburg*, in Bavaria, on the Danube, below Ingolstadt (Aventinus); but Cluverius supposes it to be *Labenau*, on the Saltzbach, below Lauffen, in the archbishopric of Salzburg.

ARTOCARPUS (from *artos* bread, and *καρπος*, fruit), the **BREAD-FRUIT TREE**: A genus of the monandria order, belonging to the monœcia class of plants. It has a cylindric amentum or catkin, which thickens gradually, and is covered with flowers; the male and female in a different amentum. In the *male*, the calyx is two valved, and the corolla is wanting. In the *female*, there is no calyx nor corolla; the stylus is one, and the drupa is many-celled.

Though this tree has been mentioned by many voyagers, particularly by Dampier, by Rumphius, and by Lord Anson, yet very little notice seems to have been taken of it till the return of Captain Wallis from the South Seas, and since that time by others who have touched at Otaheite and some countries in the East Indies. Captain Dampier relates, that in Guam, one of the Ladrone islands, "there is a certain fruit called the *bread fruit*, growing on a tree as big as our large apple-trees, with dark leaves. The fruit is round, and grows on the boughs like apples, of the bigness of a good penny loaf: when ripe, it turns yellow, soft, and sweet: but the natives take it green, and bake it in an oven till the rind is black: this they scrape off, and eat the inside, which is soft and white, like the inside of new-baked bread, having neither seed nor stone; but if it is kept above 24 hours it is harsh. As this fruit is in season eight months in the year, the natives feed upon no other sort of bread during that time. They told us that all the Ladrone islands had plenty of it. I never heard of it in any other place."

Rumphius, after describing the tree, observes, that "the fruit is shaped like a heart, and increases to the size of a child's head. Its surface or rind is thick, green, and covered every where with warts of a quadrangular or hexagonal figure, like cut diamonds, but without points. The more flat and smooth these warts are, the fewer seeds are contained in the fruit, and the greater is the quantity of pith, and that of a more glutinous nature. The internal part of the rind, or peel, consists of a fleshy substance, full of twisted fibres, which have the appearance of fine wool; these adhere to, and in some measure form it. The fleshy part of this fruit becomes softer towards the middle, where there is a small cavity formed without any nuts or seeds, except in one species, which has but a small number, and this sort is not good, unless it is baked or prepared some other way: but if the outward rind be taken off, and the fibrous flesh dried and afterwards boiled with meat as we do cabbage, it has then the taste of artichoke bottoms. The inhabitants of Amboyna dress it in the liquor of cocoa-nuts; but they prefer it roasted on coals till the outward part or peel is burnt. They afterwards cut it into pieces, and eat it with the milk of the cocoa-nut. Some people make fritters of it, or fry it in oil; and others, as the Sumatrans, dry the internal soft part, and keep it to use instead of bread with other food. It affords a great deal of nourishment, and is very satisfying, therefore proper for hard-working people: and being of a gentle astringent quality, is good for persons of a laxative habit of body. It

Artocarpus, The Bread fruit Tree.

Plate LVI.



Argonauta Argo.

Apis.

A. Bell Pin. W. G. Sculptor fecit.

Artocarpus. It is more nourishing boiled in our manner with fat meat than roasted on coals. The milky juice which distils from the trunk, boiled with the cocoa-nut oil, makes a very strong bird-lime. This tree is to be found on the eastern parts of Sumatra, and in the Malay language is called *foccus* and *focum capas*. It grows likewise about the town of Bantam in Java, and in Ballega and Madura, and is known there by the name of *focum*."

In Anson's voyage we are informed, "that the rima, or bread fruit tree, is common in all the Ladrone islands and some of the Philippines. It is somewhat larger than our apple-tree, and bears a broad dark-coloured leaf with five indentures on each side. The fruit hangs on boughs like apples; and is of the size of a penny loaf, with a thick tough rind, which when full ripe turns yellow. The natives gather it before it is quite ripe, and bake it till the crust is pretty black; then they rasp it, and there remains a pretty loaf, with a tender yellow crust, and the crumb of it is soft and sweet as a new-baked roll: it is without any seeds or stones. This fruit the inhabitants enjoy for about seven months; during which they never eat any other kind of bread: but they are obliged to bake it every day; for when it grows a little stale, it becomes harsh and husky, somewhat like the potato-bread made in the west of England. There is, however, a remedy for this; which is cutting the loaf into slices when it is new, and drying it in the sun, by which it is changed into the pleasantest rusk that can be eaten."

† Harukef-
worth's ac-
count of Cap-
tain Cook's
voyage.

† Plate
LVI.

Captain Cook, in his voyage, observes, that this fruit not only serves as a substitute for bread among the inhabitants of Otaheite† and the neighbouring islands, but also, variously dressed, composes the principal part of their food. It grows on a tree that is about the size of a middling oak; its leaves are frequently a foot and an half long, of an oblong shape, deeply sinuated like those of the fig-tree, which they resemble in colour and consistence, and in the exuding of a milky juice upon being broken. The fruit is about the size and shape of a new-born child's head; and the surface is reticulated†, not much unlike a truffle; it is covered with a thin skin, and has a core about as big as the handle of a small knife. The eatable part lies between the skin and the core; it is as white as snow, and somewhat of the consistence of new bread; it must be roasted before it is eaten, being first divided into three or four parts; its taste is insipid, with a slight sweetness somewhat resembling that of the crumb of whole wheat bread mixed with a Jerusalem artichoke. This fruit is also cooked in a kind of oven, which renders it soft, and something like a boiled potato; not quite so fairnaceous as a good one, but more so than those of the middling sort. Of the bread-fruit they also make three dishes, by putting either water or the milk of the cocoa-nut to it, then beating it to a paste with a stone pestle, and afterwards mixing it with ripe plantains, bananas, or the sour paste which they call *mahie*.

The *mahie*, which is likewise made to serve as a succedaneum for ripe bread-fruit before the season comes on, is thus made: the fruit of the bread-tree is gathered just before it is perfectly ripe; and being laid in heaps, is closely covered with leaves: in this state it undergoes a fermentation, and becomes disagreeably

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sweet; the core is then taken out entire, which is done by gently pulling out the stalk, and the rest of the fruit is thrown into a hole which is dug for that purpose generally in the houses, and neatly lined in the bottom and sides with grass: the whole is then covered with leaves and heavy stones laid upon them; in this state it undergoes a second fermentation, and becomes sour, after which it will suffer no change for many months. It is taken out of the hole as it is wanted for use; and being made into balls, it is wrapped up into leaves and baked: after it is dressed, it will keep five or six weeks. It is eaten both cold and hot; and the natives seldom make a meal without it, though to Europeans the taste is as disagreeable as that of a pickled olive generally is the first time it is eaten. The fruit itself is in season eight months in the year, and the *mahie* supplies the inhabitants during the other four.

To procure this principal article of their food (the bread-fruit), costs these happy people no trouble or labour except climbing up a tree: the tree which produces it does not indeed grow spontaneously; but if a man plants ten of them in his life-time, which he may do in about an hour, he will as completely fulfil his duty to his own and future generations, as the native of our less temperate climate can do by ploughing in the cold of winter, and reaping in the summer's heat, as often as these seasons return; even if, after he has procured bread for his present household, he should convert a surplus into money, and lay it up for his children.

There are two species of *artocarpus*, viz. the *incisus*, with gashed leaves; and the *integrifolia*, with entire leaves. There is also said to be another distinction, in- to that which bears fruit with stones or seeds, and that in which the fruit has none. The parts of fructification of that tree which bears the fruit without stones are defective. The amentum, or catkin, which contains the male parts, never expands. The styli, or female part of the fruit, are likewise deficient. From which it follows, that there can be no stones or seeds, and therefore that this tree can be propagated only by suckers or layers; although it is abundantly evident, that it must originally have proceeded from the seed-bearing bread-fruit tree. Instances of this kind we sometimes find in European fruits; such as the barberry, and the Corinthian grape from Zant commonly called *currants*, which can therefore be increased only by layers and cuttings. Dr Solander was assured by the oldest inhabitants of Otaheite and the adjoining islands, that they well remember there was formerly plenty of the seed bearing bread-fruit; but they had been neglected upon account of the preference given to the bread-fruit without seeds, which they propagate by suckers.

ARTOIS, a province of France, and one of the finest and most fertile in the whole kingdom; formerly it was one of the 17 provinces of the Netherlands, but now belongs entirely to France. The names of *Artois*, and *Arras* its capital, are derived from the *Atrebates*, a people of Gallia Belgica, mentioned by Julius Cæsar. Its greatest length from north to south is about 24 leagues, and its breadth about 12, being bounded to the south and west by Picardy, to the east by Hainault, and to the north by Flanders. A con-

3 B

siderable

Artocarpus
Artois.

Artolice
||
Arucia.

considerable trade is carried on in the province in grain, flax, hops, wool, and linen cloth. The states, who meet regularly once a-year, consist of the clergy, nobility, and commoners; and sit generally a fortnight at Arras: their chief business is to deliberate on the ways and means to raise the money which the king demands of them, and which usually amounts to about 400,000 livres, exclusive of forage-money. The most considerable places in Artois are, Arras the capital, Bapaume, Bethune, St Venant, and St Omer.

ARTOLICA (anc. geog.), a town of the Salassii, in Gallia Cispadana, (Antonine); at the foot of the Alps; now called *la Tuile* by the inhabitants, a hamlet of Savoy, in the duchy of Aoust, at the foot of mount St Bernard the Lefs.

ARTOTYRITES, a Christian sect. in the primitive church, who celebrated the eucharist with bread and cheese, saying, that the first oblations of men, were not only of the fruits of the earth, but of their flocks. The word is derived from *artos*, bread, and *tyros*, cheese.

The Artotyrites admitted women to the priesthood and episcopacy; and Epiphanius tells us, it was a common thing to see seven girls at once enter into their church, robed in white, and holding a torch in their hand; where they wept, and bewailed the wretchedness of human nature, and the miseries of this life.

ARUA (anc. geog.), a town of Bætica, of the resort of the Conventus Hispalensis, (Pliny): now *Alcala*, a citadel of Andalusia, on the Bætis, or Guadalquivir, seven leagues above Seville.

ARVALES FRATRES, in Roman antiquity, a college of 12 priests, instituted by Romulus, and chosen out of the most noble families, himself being one of that body: they assisted in the sacrifices of the ambrosia annually offered to Ceres and Bacchus, for the prosperity of the fruits of the earth; when they wore on their heads crowns made of ears of corn.—The original of this institution was as follows: Acca Laurentia, Romulus's nurse, was accustomed once a-year to make a solemn sacrifice for a blessing on the fields, her 12 sons always assisting her in the solemnity; but at last losing one of her sons, Romulus offered himself to supply his place, and gave this small society the name of *Arvales fratres*. This order was in great repute at Rome: they held the dignity for life, and never lost it upon account of imprisonment, banishment, or any other accident.

ARUBA, a small island on the coast of Terra Firma, subject to the Dutch, and situated in W. Long. 69. 30. N. Lat. 12. 30.

ARUCI (anc. geog.), a town of the Celtici, in the north of Lusitania, (Antonine, inscription); called also *Aruci Novum*, to distinguish it from the following: Now supposed to be *Moura*, a small city of Portugal, near the confluence of the Ardila and Guadalquivir.

ARUCI VETUS (anc. geog.), a small city of the Turdetani, in Bætica, (Ptolemy); now *Aroche*, a hamlet of Andalusia, on the confines of Portugal and Estremadura, on the river Gama, seven leagues to the east of Aruci-Novum or Moura. From it a mountain, in its neighbourhood, takes the name *Arucitanus*. Now *la Sierra de Aroche*.

ARUCIA (anc. geog.), a town of Illyria, in the

inland parts of Liburnia (Ptolemy). Now *Bregna*, according to some; but *Ottoschatz*, according to others; a citadel of Morlachia.

ARVERNI, an appellation early used for the capital of the Arverni, according to the custom of the latter ages of naming towns from the people; it was formerly called *Nemossus*, (Strabo). The *Arverni*, a brave and ancient people, and one of the most powerful nations of Gaul, claimed affinity with the Romans, as descendants from Antenor, (Lucan): and after their conquest by the Romans, their ancient liberty was preserved to them on account of their bravery, (Pliny). Above 1000 years ago the town was called *Clarus Mons*, from its situation, (Valesius). Now *Clermont*, in Auvergne. E. Long. 3. 20. N. Lat. 45. 42.

ARVIL-SUPPER, a feast or entertainment made at funerals, in the north part of England. Arvil-bread is the bread delivered to the poor at funeral solemnities: and *arvil*, *arval*, *arfal*, are used for the burial or funeral rites; as,

Come, bring my jerkin, Tibb, I'll to the *arvil*;
Yon man's dea scuy scoun, it makes me *marvil*.

Yorksb. Dial. p. 58.

ARVIRAGUS, an ancient British king who flourished in the time of the emperor Domitian. He gained a complete victory over Claudius: but being soon after besieged in the city of Winchester, he made a treaty with the Romans, and married the emperor's daughter Genuiffa. This monarch lived to a good old age: he confirmed the ancient laws, enacted new ones, and liberally rewarded persons of merit.

ARUM, WAKEROBIN, or CUCKOW-PINT: A genus of the polyandria order, belonging to the gynandria class of plants; and in the natural method ranking under the 2d order, *Piperita*. The spathe is monophyllous, and cowl-shaped; the spadix is naked above, female below, and stamen'd in the middle.—The

Species are 22; of which the most remarkable are the following. 1. The maculatum, or common wake-robin, grows naturally in woods and on shady banks in most parts of Britain. The leaves are halberd-shaped, very entire, and spotted; the berries numerous, growing in a naked cluster. The flowers appear in April; and their wonderful structure hath given rise to many disputes among the botanists. The receptacle is long, in the shape of a club, with the seed-buds surrounding its base. The chives are fixed to the receptacle amongst the seed-buds, so that there is no occasion for the tips to be supported upon threads, and therefore they have none; but they are fixed to the fruit-stalk, and placed between two rows of tendrils: the point in dispute is what is the use of those tendrils? 2. The proboscideum. 3. The arisarium. 4. The tenuifolium. These three species have usually been separated from this genus, and distinguished by the general name of *arisarum* or *friar's cowl*, on account of the resemblance of their flowers to the shape of the cowls worn by friars. The flowers appear in April. 5. The italicum, is a native of Italy, Spain, and Portugal. The leaves rise a foot and an half high, terminating in a point; they are very large, and finely veined with white, interspersed with black spots, which, together with the fine shining green, make a pretty variety. The flowers grow near a foot high; and

Arverni
||
Arum.

Arum. and have very long upright spathas, which are of a pale green. They appear in the end of April, or beginning of May. 6. The *dracunculus*, or common dragons, grows naturally in most of the southern parts of Europe. It hath a straight stalk three or four feet high, which is spotted like the belly of a snake: at the top it is spread out into leaves, which are cut into several narrow segments almost to the bottom, and are spread open like a hand; at the top of the stalk the flower is produced, which is in shape like the common arum, having a long spatha of a dark purple colour, standing erect, with a large pistil of the same colour, so that when it is in flower it makes no unpleasing appearance; but the flower hath so strong a scent of carrion, that few people can endure it, for which reason it hath been banished most gardens. 7. The *trilobatum*, or arum of Ceylon, is a native of that island and some other parts of India; so is very impatient of cold. It is a low plant; the flower rises immediately from the root, standing on a very short footstalk: the spatha is long, erect, and of a fine scarlet colour, as is also the pistil. 8. The *colocasia*. 9. The *divaricatum*, with spear-shaped leaves. 10. The *peregrinum*, or elder. 11. The *esculentum*, or eatable arum. 12. The *sagittifolium*, or greatest Egyptian arum. All these species have mild roots, which are eaten by the inhabitants of the hot countries, where they grow naturally; and some of them are cultivated by the inhabitants of the sugar colonies, where their roots are constantly eaten, as also the leaves of some of them, particularly those of the *esculentum*, which they call *Indian kale*; and which, in those countries where many of the esculent vegetables of England are with difficulty produced, proves a good succedaneum. 13. The *arborescens*, or dumb cane, is a native of the sugar islands and warm parts of America, where it grows chiefly on low grounds. All the parts of it abound with an acrid juice; so that if a leaf or part of the stalk is broken and applied to the tip of the tongue, it occasions a very painful sensation and a great defluxion of saliva. The stalks of this plant are sometimes applied to the mouths of the negroes by way of punishment.

Culture. All the species of this plant are hardy, except the *trilobatum* and the *arborescens*. The former must be kept constantly in a stove, and the last in a moderate hot-bed. The *arborescens* is propagated by cutting off the stalks into lengths of three or four joints, which must be left to dry six weeks or two months; for if the wounded part is not perfectly healed over before the cuttings are planted, they will rot and decay. They are then to be planted in small pots filled with light sandy earth, and plunged in a moderate hot-bed of tan, observing to let them have little water till they have taken good root.

Medicinal Uses. The roots of the *maculatum* and *dracunculus* are used in medicine, and differ in nothing but that the latter is somewhat stronger than the former. All the parts of the arum, particularly the root, have an extremely pungent, acrimonious taste; if the root be but lightly chewed, it continues to burn and vellelicate the tongue for some hours, occasioning at the same time a considerable thirst: these symptoms are alleviated by butter, milk, or oily liquors. Dried and kept for some time, it loses much of its acrimony, and

becomes at length an almost insipid farinaceous substance.

This root is a powerful stimulant and attenuant. It is reckoned a medicine of great efficacy in some cachectic and chlorotic cases, in weakness of the stomach occasioned by a load of viscid phlegm. Great benefit has been obtained from it in rheumatic pains, particularly those of the fixed kind, and which were seated deep. In these cases it may be given from 10 grains to a scruple of the fresh root twice or thrice a day, made into a bolus or emulsion with unctuous and mucilaginous substances, which cover its pungency, and prevent its making any painful impression on the tongue. It generally excites a slight tingling sensation through the whole habit, and, when the patient is kept warm in bed, produces a copious sweat.

The arum was formerly an ingredient in an officinal preparation, the compound powder; but in that form its virtues are very precarious. Some recommended a tincture of it drawn with wine; but neither wine, water, nor spirits, extract its virtues.

ARUNDA, a town of Hispania Bætica, on the Annas, or Guadiana, (Ptolemy, Pliny): Now said to be *Ronda*, in the province of Granada, on the confines of Andalusia. W. Long. 5. 40. Lat. 36. 26.

ARUNDEL (Thomas), archbishop of Canterbury in the reigns of Richard II. Henry IV. and Henry V. He was the second son of Robert Earl of Arundel and Warren, and brother of Richard Earl of Arundel who was beheaded. At 22 years of age, from being archdeacon of Taunton he was raised to the bishopric of Ely, the 6th of April 1375, in the reign of Edward III. He was a great benefactor to the church and palace of this see; among other donations he gave a curious table of massy gold, adorned with precious stones, which had been given to prince Edward by the king of Spain, and sold by the latter to Bishop Arundel. In 1386, he was appointed lord chancellor of England; two years after, he was translated to the see of York; and, in 1396, was advanced to the archiepiscopal see of Canterbury, when he resigned the chancellorship. This was the first instance of the translation of an archbishop of York to the see of Canterbury. Scarcely was he fixed in this see, when he had a contest with the university of Oxford about the right of visitation. The affair was referred to king Richard, who determined it in favour of the archbishop. At his visitation in London, he revived an old constitution, by which the inhabitants of the respective parishes were obliged to pay to their rector one halfpenny in the pound out of the rent of their houses. In the second year of his translation, a parliament being held at London, the commons with the king's leave impeached the archbishop, together with his brother the Earl of Arundel, and the Duke of Gloucester, of high treason. The archbishop was sentenced to be banished, and within forty days to depart the kingdom on pain of death. He retired first to France; and then to the court of Rome, where Pope Boniface IX. gave him a kind reception. About this time the Duke of Lancaster (afterwards Henry IV.) was in France, having been banished by king Richard. The nobility and others, tired with the oppressions of Richard, solicited the Duke to take the crown. This their request they drew up in a letter,

**Arunda,
Arundel.**

Arundel. letter, and sent it over by faithful messengers to archbishop Arundel, desiring him to be their advocate on this occasion with the Duke. The archbishop, being a fellow-sufferer, gladly accepted the office; and went with the messengers to the Duke at Paris, where they delivered the letters from the nobles and commons of England, and the archbishop seconded them with the best arguments he could invent. The inviting offer, after some objections which were easily obviated, the Duke accepted; and upon his accession to the throne, Arundel, who had returned with him to England, was restored to his see. In the first year of this prince's reign, Arundel summoned a synod which sat at St Paul's. The next year the commons moved that the revenues of the church might be applied to the service of the public; but Arundel opposed the motion with such vigour, that it was thrown aside. In the year 1408, Arundel began to exert himself against the Lollards, or Wickliffites; and his zeal for suppressing that sect carried him to several unjustifiable severities against the heads of it, particularly against Sir John Oldecastle and Lord Cobham. He also procured a synodical constitution, which forbade the translation of the Scriptures into the vulgar tongue. This prelate died at Canterbury, Feb. 20th, 1413, of an inflammation in his throat, with which he was seized (as it is pretended) whilst he was pronouncing sentence upon Lord Cobham. The Lollards asserted this to be a judgment from God; and indeed Bishop Goodwin speaks in the same manner, saying, "He who had with-held from the people the word of God, the food of the soul, by the just judgment of God had his throat so closed, that he could not speak a single word, nor swallow meat or drink, and was so starved to death." He was buried in the cathedral church of Canterbury, near the west end, under a monument erected by himself in his lifetime. To this church he was a considerable benefactor: for he built the lantern-tower and great part of the nave; gave a ring of five bells, called from him *Arundel's ring*; several rich vestments, a mitre encased with jewels, a silver gilt crozier, and two golden chalices.

ARUNDEL, a borough and market-town in Suffex, seated on the north-west side of the river Arun, over which there is a bridge. It had a harbour, wherein a ship of 100 ton burthen might ride; but the sea had ruined it so far, that, in 1733, an act passed for repairing it, and for erecting new piers, locks, &c. The castle, which gives the title of *earl* to its possessors, is seated on the east of the Tame, and is reputed to be a mile in compass. It sends two members to parliament; and is 55 miles south-west-by-south of London, and 10 miles east of Chichester. Arundel is the premier earldom in England, belonging to the illustrious family of Norfolk; and is the only title in England that goes along with the lands. W. Long. o. 25. N. Lat. 50. 45.

ARUNDEL Oil, in the materia medica. At Bombay, Gambroon, and Surat, in the East Indies, there grows a tree which bears a nut inclosed in a rough husk, which resembles much the horse-chestnut; and the kernel of the nut yields an oil by expression, which is of a purgative nature. A tea-spoonful of it is reckoned a dose. The tree goes by the name of the *Arundel tree* at Bombay, and its oil by that of the *Arundel*

del oil. Mr Sinclair, one of the surgeons belonging to the royal regiment of artillery, who was formerly surgeon to an East India ship, gave Dr Monro of London a small bottle full of this oil, which he said was much used for the cure of the dysentery in India, and that he had given it in four recent cases of dysentery with success. —Dr Monro thinks it probable that this is the oil of the purging nuts mentioned in Dale's Pharmacologia, which are got from the tree called *Lignum Moluccense*, *Pavana dictum*, *fructu avellane*, J. B. 1. 342; and *pinus Indica*, *nucleo purgante*, C. B. 492; and the *palma Christi Indica*, Tournefort Mat. Med.

ARUNDELIAN MARBLES, **OXFORD MARBLES**, or **PARIAN CHRONICLE**, are ancient stones (as has been supposed), whereon is inscribed a chronicle of the city of Athens, engraven in capital letters in the island of Paros, one of the Cyclades, 264 years before Jesus Christ. They take their first name from Thomas Earl of Arundel, who procured them out of the East, or from Henry his grandson, who presented them to the university of Oxford.

The Arundelian marbles, in their perfect state, contained a chronological detail of the principal events of Greece during a period of 1318 years, beginning with Cecrops, before Christ 1582 years, and ending with the archonship of Diognetus, before Christ 264. But the chronicle of the last 90 years is lost; so that the part now remaining ends at the archonship of Diotimus, 354 years before the birth of Christ: and in this fragment the inscription is at present so much corroded and effaced, that the sense can only be discovered by very learned and industrious antiquaries; or, more properly speaking, supplied by their conjectures.

This chronicle, and many other reliques of antiquity, real or pretended, were purchased in Asia Minor, in Greece, or in the islands of the Archipelago, by Mr William Petty, who in the year 1624 was sent by Thomas Earl of Arundel for the purpose of making such collections for him in the East. They were brought into England about the beginning of the year 1627, and placed in the gardens belonging to Arundel-house in London.

Soon after their arrival they excited a general curiosity, and were viewed by many inquisitive and learned men; among others by Sir Robert Cotton, who prevailed upon Selden to employ his abilities in explaining the Greek inscriptions. Selden and two of his friends, Patrick Young, or, as he styled himself in Latin, *Patricius Junius*, and Richard James, immediately commenced their operations, by cleaning and examining the marble containing the Smyranean and Magnesian league, and afterwards proceeded to the Parian chronicle. The following year Selden published a small volume in quarto, including about 39 inscriptions copied from the marbles.

In the turbulent reign of Charles I. and the subsequent usurpation, Arundel-house was often deserted by the illustrious owners; and, in their absence, some of the marbles were defaced and broken, and others either stolen or used for the ordinary purposes of architecture. The chronological marble, in particular, was unfortunately broken and defaced. The upper part, containing 31 epochas, is said to have been worked up in repairing a chimney in Arundel-house.

In the year 1667, the Hon. Henry Howard, afterwards

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wards duke of Norfolk, the grandson of the first collector, presented these supposed remains of antiquity to the university of Oxford.

Seldon's work becoming very scarce, Bishop Fell engaged Mr Prideaux to publish a new edition of the inscriptions, which was printed at Oxford in 1676. In 1732 Mr Maittaire obliged the public with a more comprehensive view of the marbles than either of his predecessors. Lastly, Dr Chandler published a new and improved copy of the marbles in 1763, in which he corrected the mistakes of the former editors; and in some of the inscriptions, particularly that of the Parian chronicle, supplied the *lacuna* by many ingenious conjectures.

The Arundelian marbles have generally been regarded as a curious monument of antiquity. They were, however, discovered in some instances to be inconsistent with the most authentic historical accounts; Sir Isaac Newton and several other modern philosophers paid little or no regard to them; and of late their absolute authenticity has been severely questioned in an express dissertation upon the subject, entitled *The Parian Chronicle*. In this dissertation much ingenuity as well as judgment and a great extent of ancient learning are displayed. His doubts, the author observes, arise from the following considerations.

I. "The characters have no certain or unequivocal marks of antiquity." The Π and Ζ, which frequently occur in the form supposed to be the most ancient (viz. the perpendicular line of the π on the right hand only half as long as that on the left, and the Ζ in the form of a prostrate π), are so well known, that any modern fabricator of a Greek inscription, which he intends to impose upon the world as a relique of antiquity, would most probably use them in preference to the more common and ordinary forms. But the letters in the Parian chronicle have no appearance of antiquity except this very equivocal one. They do not in the least resemble the Sigeian, the Nemean, or the Delian inscriptions, which are supposed to be of a more ancient date. They differ in many respects from the letters on the Marmor Sandivense, which, according to the learned editor of that inscription, was engraved in the year before Christ 374. They bear no sort of resemblance to the characters on the Farnesian pillars, to those of the Aelxandrian manuscript, or others of a later date. They seem, continues our author, to resemble perhaps more than any other the letters of the alphabet taken by Montfaucon from the Marmor Cyzicenum at Venice. They are plain and simple in their form, and such as an ordinary stone-cutter of the present age would probably make, if he were employed to engrave a Greek inscription according to the alphabet now in use. The small letters intermixed among the larger have, in the opinion of our author, an air of affectation and artifice, rather than genuine antiquity; and he is persuaded, that the antiquity of an inscription can never be proved by the mere form of the letters, because the most ancient characters may be as easily counterfeited as those which compose our present alphabets.

That the learned reader may form a competent idea of the characters in the Parian chronicle, the author has compared them with those of other inscriptions, and given what is usually termed a *fac simile*.

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In regard to several *archaisms*, as they are called, in this chronicle, and which our author specifies, he contends, that no conclusion can be drawn from them in favour of its antiquity. What reason could there be, he asks, for introducing these into the Parian chronicle? We do not usually find them in Greek writers of the same age, or even in those of the most early date. The reign of Ptolemy Philadelphus, with the 21st year of which the date of the chronicle coincides, was not an age of rude antiquity with respect to the Greek language; being only 130 years after the time of Xenophon and Plato, when the Greek was spoken and written in its utmost purity and elegance: and we can scarcely suppose, that even a stone-cutter, in that refined age, would have been permitted to disgrace a superb and learned monument with such barbarisms as occur in the chronicle. The archaisms, however, he remarks, are not uniformly observed in this inscription. He adduces six instances of deviation; and adds, he is almost tempted to suspect, that *εμ Παρω, εμ Μαραθωνι*, and other pretended archaisms, are owing to a mere affectation of antiquity, or to a corrupted dialect and pronunciation in later ages. These archaisms, our author acknowledges, appear on other marbles: but he thinks, that, for that very reason, they would naturally be adopted by the fabricator of a supposititious inscription; and the authenticity of those inscriptions in which they appear must be established before they can be urged in opposition to the present argument.

II. "It is not probable that the chronicle was engraved for *private use*."—Our author thinks it an impossible supposition that such an expensive and cumbersome work could have been executed by a private citizen, either for his own amusement, or for the benefit of his fellow citizens. In the first place, a long inscription could not be engraved in marble without such an expence as few learned Greeks were able to afford. Or, if its author, by an uncommon felicity, was able to erect such a literary monument, the scheme would have been useless and imprudent; as all the contents of the inscription might have been published more commodiously and effectually by the common mode of writing in use at that time.

A variety of arguments is adduced, illustrating the superiority of a manuscript to such an inscription as the chronicle, in a number of respects; and enforcing the improbability of its having ever been executed, either for public or private use. Much evidence from ancient history is likewise produced in support of the assertion, that the common mode of writing, in the reign of Ptolemy Philadelphus, was not on stones. It is not, however, necessary to prove, by the testimony of ancient authors, that books were written on parchment, or paper made of the Egyptian papyrus, or any such materials, before the date of the Parian chronicle. This is sufficiently evinced by the very existence of the writings of Moses, David, Solomon, and the Jewish prophets; the works of Homer, Hesiod, Anacreon, Pindar, Æschylus, Sophocles, Euripides, Herodotus, Hippocrates, Aristophanes, Thucydides, Xenophon, Plato, Demosthenes, Aristotle, &c.: And it is still more incontestably proved by the libraries which were collected in preceding ages, or about that time; such as those of Polycrates in Samos, Pisistratus and Euclides at Athens, Nicocrates in Cyprus, Euripides the poet, Aristotle

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Aristotle the philosopher, Clearchus at Heraclea Pontica, and the most extensive and magnificent library of Ptolemy Philadelphus in Egypt, founded in or before the year 284, which in his time is said to have contained 100,000 volumes, and to have been enlarged by his successors to the amount of almost 700,000. Not long afterwards a library was founded at Pergamus by Attalus and Eumenes, which, according to Plutarch, contained 200,000. There are clear and decisive proof, that the common mode of writing in the time of Ptolemy Philadelphus was not on stones.

III. "The chronicle does not appear to have been engraved by *public authority*."

1. The first argument in support of this opinion is, that inscriptions of that kind usually begin with a particular form; as, Η ΒΟΤΑΗ ΚΑΙ Ο ΔΗΜΟΣ, 'The senate and the people;' or thus, ΕΔΟΞΕΝ ΤΗ ΒΟΤΑΗ ΚΑΙ ΤΟΙ ΔΗΜΩΙ, 'It pleased the senate and the people, &c. But the Parian chronicle begins in the manner of a private man, speaking of his own performance in the first person singular. This argument, our author remarks, cannot be much affected by observing, that the beginning of the inscription is obliterated; for it is necessarily implied by the words now remaining.

2. The facts and dates, which are mentioned in this chronicle, do not appear to have been extracted from any public records, or calculated to answer the purpose of authentic documents, as many eminent princes and magistrates are passed over without notice; in several instances, the transactions of whole centuries are omitted; and the facts, chiefly specified, are not matters of general or national importance.

3. The Parian inscription is such a one as we can hardly suppose the magistrates or the people of Paros would have ordered to be engraved. Stately sepulchres, pillars, triumphal arches, and the like, were erected to perpetuate the glory of eminent men. The remembrance of events in which nations were interested, the succession of princes, &c. were preserved in the same manner. Leagues, decrees, and laws, were likewise engraved on marble or brass, and fixed to a pillar, the walls of a temple, or other public buildings; because such inscriptions were designed for the inspection of the people, as they essentially concerned their conduct, their property, their liberty, or their lives. But our author asks, for whom could the chronicle of Paros be intended? It contains no encomiums on any of the patriots, the heroes, or the demigods of the country, no decrees of the magistrates, no public records, no laws of state. On the contrary, it is a work of mere speculation and learning, in which the inhabitants of that island, especially the common people, had not the least interest or concern.

These words at the beginning, ἀρχὸν τοῦ ἐν Πάροις, would naturally lead us to suppose, that the inscription related to Paros. And, if so, it would have been natural for the author to have mentioned some of the most important occurrences in the history of that island. But, says this acute and learned critic, what scheme does our chronologer pursue on this occasion? Does he record the events and revolutions of his own country? Does he mention any of the battles, sieges, and treaties of the Parians? any of their public institutions? any of their poets, patriots, or warriors? Does he mention Archilochus, who was honoured by his countrymen,

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and distinguished as a poet in a general assembly of the Greeks?—Not a syllable on any of these subjects! On the contrary, he rambles from place to place, and records the transactions of Athens, Corinth, Macedon, Lydia, Crete, Cyprus, Sicily, Persia, and other foreign countries with which Paros had no connection.

In this view the inscription seems to have been as impertinent in the island of Paros, as a marble monument would be in this country, recording the antiquities of France or Spain, or one in Jamaica recording the revolutions of England. But upon supposition that the inscription is a forgery, it is easy to account for this extraordinary circumstance. A few chronological occurrences in the ancient history of Paros would not have been so interesting to the generality of readers, or so valuable in the estimation of every lover of antiquities, or, in short, so profitable to the compiler, as a general system of Grecian chronology.

IV. "The Greek and Roman writers, for a long time after the date of this work, complain that they had no chronological account of the affairs of ancient Greece." This position is confirmed by the testimony of Julius Africanus, Justin Martyr, Plutarch, Josephus, Varro, Diodorus Siculus, and others; and the following series of interrogatories is subjoined: 'Thucydides, I know, lived 140 years before the chronicle is said to have been written; but if Thucydides, as well as other writers, complained that there was nothing but uncertainty in the earlier period of Grecian history, from whence can we suppose the author of this inscription collected such a clear, determinate, and comprehensive system of chronology? If he had any sources of information, which were unknown to succeeding writers, how happens it, that they should all of them overlook this most considerable, most exact, most creditable author? Why did they omit this ancient account of their early ages? Why did they not copy his most memorable epochas? Why did they not produce his authority? or, at least, why did they not mention his opinion? Surely nothing, to all appearance, could be more elaborate, more important, or of higher authority, than a chronological table, which was thought worthy of being engraved on marble.

V. "The chronicle is not once mentioned by any writer of antiquity." This indeed appears a strong argument against its authenticity. Apollodorus, an Athenian, the disciple of Aristarchus the grammarian, and Panætius the philosopher, wrote a genealogical and historical work on the early ages of Greece; but, though composed 120 years after the date of the Parian chronicle, it does not contain the smallest traces of a systematical chronology. It is remarkable, too, that the chronicle of Apollodorus is quoted by Diodorus Siculus, Strabo, Plutarch, A. Gellius, Lucian, and many other writers of antiquity; while the Parian chronicle, which comprehends a more extensive period, is entirely unnoticed. It contains, however, such wonderful discoveries in ancient history, that if it had existed 264 years before the christian æra, it must have excited a general attention, and been referred to as an authority by writers of succeeding times. But we do not find, in any author of antiquity, either poet or historian, geographer or chronologer, mythologist or scholiast, the most distant allusion to the Parian chronicle; though it was such a common practice among the

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the ancients to mention the works of their predecessors, that in many books we find references and allusions to three, four, five, six, or seven hundred different authors of every denomination.

VI. "Some of the facts mentioned in the chronicle seem to have been taken from writers of a later date." Our inquirer collates several passages in the Parian chronicle with parallel passages in Greek authors, to evince that there is, in the former, an appearance to imitation, or a stronger resemblance than such as may be supposed to arise from accident; that there are likewise some improbabilities attending the account of Deucalion, as related in the Parian chronicle; and that the names of six, and, if the lacunæ are properly supplied, the names of 12 cities appear to have been engraved on the marble, exactly as we find them in *Ælian's Various History*. But there is not, our author observes, any imaginable reason for this particular arrangement. It does not correspond with the time of their foundation, with their situation in Ionia, with their relative importance, or with the order in which they are placed by other eminent historians. The argument by which our author endeavours to prove that the Parian chronicle has, in this instance, copied *Ælian's Various History*, seems decisive of the fact. He observes, that six names may be transposed 720 different ways; and that 12 names admit of 479,001,600 different transpositions. Supposing then, that there is no particular reason for one arrangement rather than another, it will follow, that the chance of two authors, placing them in the same order, is, in the former case, as 1 to 720; and in the latter as 1 to 479,001,600. It is therefore, says he, utterly improbable, that these names would have been placed in this order on the marble, if the author of the inscription had not transcribed them from the historian.

It may indeed be urged, with regard to the similarity of arrangement in the Parian chronicle and *Ælian's Various History*, that the inference might be the very inverse of that which is specified by our author. But that *Ælian* should have seen the Parian chronicle, without once mentioning it; or that he should have exactly copied a list of towns, arranged neither according to chronological nor topographical order; is indeed a supposition equally improbable with the other.

VII. "Parachronisms appear in some of the epochas, which we can scarcely suppose a Greek chronologer in the 129th Olympiad would be liable to commit." After specifying these, our inquirer asks, Would a writer of reputation and learning, in one of the most polished and enlightened æras of ancient Greece, commit such mistakes in opposition to the positive attestations of the most accurate historians, in events of public notoriety? Would a private citizen, or a magistrate of Paros, order a crude and inaccurate series of epochas to be engraved, at a great expence, and transmitted to posterity on a marble monument? It is hardly probable.

VIII. "The history of the discovery of the Parian chronicle is obscure and unsatisfactory." Our author observes, that it is attended with some suspicious circumstances, and without any of those clear and unequivocal evidences which always discriminate truth from falsehood. There are no data in the inscription by which to discover the place where the marble was

erected. The place likewise where it was found is not ascertained; though the generality of writers who have had occasion to mention it have supposed that it was found in the island of Paros. If it was erected at Smyrna, as some imagine, our author asks, for what purpose does the writer mention *Astyanax* the archon of Paros, and not one circumstance relative to Smyrna? If, adds he, it was erected at Paros, why does he not mention more archons of that city than one? Or how shall we account for his profound silence with respect to all the events and revolutions which must have happened in that island, and have been infinitely more interesting to the natives than the transactions of any foreign country?

The train of circumstances by which the Parian chronicle came into the possession of Mr. Petty, whom Lord Arundel had sent into the East for the purpose of collecting antiquities, as well as the subsequent conduct of *Peirese* its former owner, affords our author a strong presumption, that "the inscription was actually fabricated, with the view of obtaining for it a high price, upon the pretence that it was a relic of great antiquity. It is certain, that there is something mysterious in the conduct of the first ostensible proprietors. These marbles had been totally unknown, or unnoticed, for almost 1900 years, and at last they are dug out of the ground—no body can tell us when or where!"

IX. "The literary world has been frequently imposed upon by spurious books and inscriptions; and therefore we should be extremely cautious with regard to what we receive under the venerable name of antiquity." This proposition is illustrated by a great variety of examples, and very properly exposes the forgeries which have disgraced the republic of letters in different ages: and although one of the more recent ones cited, namely, *Ossian's poems*, be a point very far indeed from being established, yet that deceptions of this kind have been practised, is an unquestionable fact.

In endeavouring, toward the end of his dissertation, to investigate the time of the supposed forgery, he observes, that the 16th century, and the prior part of the 17th, produced a multitude of grammarians, critics, and commentators, deeply versed in Grecian literature, and amply qualified for the compilation of such a chronological system as that of the Arundelian marbles. Above all, the science of chronology was particularly studied and investigated about that time: "Nunc fervet chronologia," says Scaliger in the year 1605, "omnes hoc ferrum excelsiunt." *Casaubon* treats those persons with contempt who were unacquainted with the improvements which had been made in that department of learning after the revival of letters. Innumerable systems of chronology had been published before the year 1625; from which it was easy to extract a series of memorable events, and give the compilation a Grecian dress. "The avidity," says our author, "with which all relics of antiquity were then collected, and the high price at which they were purchased, were sufficient inducements to any one, whose avarice or whose necessity was stronger than his integrity, to engrave his labours on marble, and transmit them to Smyrna, as a commodious emporium for such rarities."

The precise period of the fabrication, however, must

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still be reckoned apocryphal and uncertain. The sum of fifty guineas, which Pieresc gave to the supposed fabricator, was inadequate to such a laborious and expensive work. Upon the whole, perhaps, it would be too hasty to pronounce decisively that this famous Chronicle, so long respected, is an imposition upon the public. It may, however, be safely affirmed, that the suspicions against it are extremely strong, and the objections already cited of a nature very difficult to be removed. No attempts have yet been made with this view: But under some future article, as *CHRONOLOGY*, *MARBLE*, or *PARIAN Chronicle*, we may possibly have an opportunity of resuming the subject with additional information.

ARUNDO, the **REED**: a genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx consists of two valves, and the floccules are thick and downy.

Species and properties. 1. The phragmitis, or common march-reed, grows by the sides of rivers and in standing waters. 2. The debax, or manured reed, is a native of warm countries, but will bear the cold of our moderate winters in the open air. It dies to the surface in autumn, but appears again in the spring, and, if kept supplied with water, will grow 10 or 12 feet high in one summer. The stalks of this are brought from Spain and Portugal; and are used by the weavers, as also for making fishing-rods. 3. The versicolor, or Indian variegated reed, is supposed to be a variety of the second, differing from it only in having variegated leaves. 4. The bambos, or bamboo †, is a native of the East Indies and some parts of America; where it frequently attains the height of 60 feet. The main root is long, thick, jointed, spreads horizontally, and sends out many cylindrical woody fibres, of a whitish colour, and many feet long. From the joints of the main root spring several round jointed stalks to a prodigious height, and at about 10 or 12 feet from the ground send out at their joints several stalks joined together at their base: these run up in the same manner as those they shoot out from. If any of these be planted with a piece of the first stalk adhering to them, they will perpetuate their species. They are armed at their joints with one or two sharp rigid spines, and furnished with oblong oval leaves, eight or nine inches long, seated on short foot-stalks. The flowers are produced in large panicles from the joint of the stalks, placed three in a parcel close to their receptacles: they resemble those of the common reed, and are succeeded by seeds of the same form surrounded with down.

The young shoots are covered with a dark-green bark; these when very tender are put up in vinegar, salt, garlic, and the pods of capicum, and thus afford a pickle, which is esteemed a valuable condiment in the Indies, and is said greatly to promote the appetite and assist digestion (see *ACHAR*). The stalks in their young state are almost solid, and contain a milky juice: this is of a sweet nature; and as the stalks advance in age, they become hallow, except at the joints, where they are stopped by a woody membrane, upon which this liquor lodges, and concretes into a substance called *Tabaxir*, or sugar of *Mombu*, which was held in such esteem by the ancients, in some particular disorders, that it was equal in value to its weight in silver. The

old stalks grow to five or six inches diameter, are then of a shining yellow colour, and are so hard and durable that they are used in buildings, and for making all sorts of household furniture. These, when bored though the membranes at their joints, are converted into water-pipes. They serve also to make the sticks and poles with which the slaves or other persons carry those sort of litters which are called *palanquins*, and are so common and convenient in all the East. The smaller stalks are used for walking-sticks. The inhabitants of Otaheite make flutes of them, about a foot long, with two holes only, which they stop with the first finger of the left hand and the middle one of the right, and they blow through their nostrils. 5. The arborea, with a tree like stalk, differs from the former only in having narrower leaves. 6. The orientalis is what the Turks use as writing-pens; it grows in a valley near mount Athos, as also on the banks of the river Jordan. None of these plants are at present to be found in Britain.

Culture. As all these plants grow naturally in low marshy lands, they must be supplied with plenty of water. The second kind requires little care; the third is more delicate, and requires to be kept in pots. The fourth, fifth, and sixth sorts must be preserved in stoves. They are to be planted in tubs filled with rich earth, and plentifully supplied with water. When the tubs decay they may be suffered to grow into the tan, which will encourage them to grow to a larger size: but care must be taken, when the bed is refreshed with new tan, to leave a sufficient quantity of old tan about the roots of the plants; for if they are too much bared and the new tan laid near them, when that heats it will scorch their roots, so that the plants are sometimes destroyed by it.

ARUNDO Saccharifera, or *Sugar-cane*. See *SACCHARUM*.

ARUSINI CAMPI (erroneously written *Taurasini* by Cluverius), plains in Lucania, famous for the last battle fought between the Romans and Pyrrhus. That prince being at Tarentum, and hearing that the two new consuls Curius Dentatus and Cornelius Lentulus had divided their forces, the one including Lucania and the other Samnium; he likewise divided a chosen detachment of his army into two bodies, marching with his Epirots against Dentatus, in hopes of surprising him in his camp near Beneventum. But the consul having notice of his approach, marched out of his entrenchments with a strong detachment of legionaries to meet him, repulsed his vanguard, put many of the Epirots to the sword, and took some of their elephants. Curius, encouraged by this success, marched into the Arusian fields, and drew up his army in a plain, which was wide enough for his troops, but too narrow for the Epirot phalanx to act with its full effect. But the king's eagerness to try his strength and skill with so renowned a commander, stimulated him to engage at that great disadvantage. Upon the first signal the action began; and one of the king's wings giving way, victory seemed to incline to the Romans. But that wing where the king fought in person repulsed the enemy and drove them to their entrenchments. This advantage was in great part owing to the elephants; a circumstance which Curius perceiving, commanded a body of reserve, which he had posted near

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Arusini.

the

† See *Bam-*
boo.

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Arzilla.

the camp, to advance and attack those animals with burning torches; which frightened and annoyed them to such a degree, that they wheeled about, broke into the phalanx, and put that body into the utmost disorder. The Romans, taking advantage of this confusion, charged with such fury that the enemy were entirely broken and defeated. Pyrrhus retired to Tarentum, attended only by a small body of horse, leaving the Romans in full possession of his camp; which they so much admired, that they made it a model which they followed ever after.

ARUSPICES, or HARUSPICES, in Roman antiquity, an order of priests who pretended to foretell future events by inspecting the entrails of victims killed in sacrifice; they were also consulted on occasion of portents and prodigies. The haruspices were always chosen from the best families; and as their employment was of the same nature as that of the augurs, they were as much honoured. Their college, as well as those of the other religious orders, had its particular registers and records.

ARX, in the ancient military art, a town, fort, or castle, for defence of a place.

The arx in ancient Rome was a distinct edifice from the capitol, though some have confounded the two. According to Ryckius, the arx, properly speaking, was a place on the highest part of the Capitoline Mount, stronger and better fortified than the rest, with towers and pinnated walls: in which was also the temple of Jupiter Capitolinus.

ARX also denoted a consecrated place on the Palatine Mount, where the augurs publicly performed their office. Some will have the arx to have been the augural temple; but Varro expressly distinguishes between the two.

ARX was particularly used for a public place in Rome, set apart for the operations of the augurs. In which sense arx amounts to the same with what is otherwise called *auguraculum* and *auguratorium*, and in the camp *augurale*. Out of this arx it was that the *feciales*, or heralds, gathered the grass used in the ceremony of making leagues and treaties.

Arx Britannica, a citadel of Batavia, whose foundation is seen at low water, near the old mouth of the middle Rhine: some imagine it the pharos or high tower of Caligula, as Suetonius calls it; a monument of Caligula's sham conquest of Britain. Others, that it was built by Drusus, with an altar afterwards by Claudius, on his expedition into Britain. But the usual passage was from Gesoriacum; and Suetonius expressly says, Claudius passed over thence. The ancient name of this citadel, now covered by the sea, is no where expressed: Now commonly called 't *Huis Britten*, or *Brittenburg*; that is, *Arx Britannica*; but from what authority does not appear.

ARYTENOIDES, in anatomy, the name of two cartilages which, together with others, constitute the head of the larynx. It is also applied to some muscles of the larynx.

ARYTHMUS, in medicine, the want of a just modulation in the pulse. It is opposed to *eurythmus*, a pulse modulated agreeably to nature.

ARZILLA, a very ancient maritime town of Africa, in the kingdom of Fez, about five leagues from

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Tangiers. It is built at the mouth of a river, and inhabited by Moors and Jews, who carry on no trade. It was formerly a Roman colony; afterwards fell under the government of the Goths, and was next taken by the Mahometans. Alphonso of Portugal, surnamed the African, took it by assault in 1471, and brought away the presumptive heir of the crown. After that prince came to the throne, he besieged it, in 1508, with 100,000 men; but was obliged to abandon the undertaking. However, at length the Portuguese forsook it of their own accord. W. Long. 5. 30. N. Lat. 35. 30.

AS, in antiquity, a particular weight, consisting of 12 ounces; being the same with *libra*, or the Roman pound. The word is derived from the Greek *αἰς*, which in the Doric dialect is used for *αἰς*, *one*, q. d. an entire thing; though others will have it named *as* quasi *as*, because made of brass.

As was also the name of a Roman coin, which was of different weights and different matter in different ages of the commonwealth.—Under Numa Pompilius, according to Eusebius, the Roman money was either of wood, leather, or shells. In the time of Tullus Hostilius, it was of brass; and called *as*, *libra*, *libella*, or *pondo*, because actually weighing a pound or 12 ounces. Four hundred and twenty year after, the first Punic war having exhausted the treasury, they reduced the *as* to two ounces. In the second Punic war, Hannibal pressing very hard upon them, they reduced the *as* to half its weight, viz. to one ounce. And, lastly, by the Papirian law, they took away half an ounce more, and consequently reduced the *as* to the diminutive weight of half an ounce: and it is generally thought that it continued the same during the commonwealth, and even till the reign of Vespasian. The *as* therefore was of four different weights in the commonwealth. Its original stamp was that of a sheep, ox, or sow: but from the time of the emperors, it had on one side a Janus with two faces, and on the reverse the rostrum or prow of a ship.

As was also used to denote any integer or whole. Whence the English word *ace*.—Thus *as* signified the whole inheritance; whence *heres ex asse*, the heir to the whole estate.

ASA, king of Judah, succeeded his father Abijam. He pulled down the altars erected to idols, restored the worship of the true God, and, with the assistance of Benhaded king of Syria, took several towns from the king of Israel. He died 917 years before the Christian æra, and was succeeded by Jehoshaphat.

ASA, among naturalists. The writers of the later ages have formed this word *asa* from the *lasar* of the ancients, and attributed it to a gum very different from that anciently known by the name they have thus corrupted.

The *asa* of the ancients was an odoriferous and fragrant gum; and the *asa* of the after-ages had so little title to this epithet, that they distinguished it by one, expressing its being of an offensive or stinking smell. The Arabian writers, according to this distinction, describe two kinds of *asa*, the one stinking, the other aromatic; and the modern Greeks preserved the name *asa*, or *lasar*, to the stinking gum the Latins called by that name, but added a distinctive epithet to express its smell, and called it *scardolasarum*.

As,
Afa.

Asa
||
Asarota.

ASA or ASSEA, in the materia medica, a name given to two very different substances, called *asa-dulcis* and *asa-fatida*.

Asa Dulcis is the same with BENZOIN.

Asa-Fatida is the concrete juice of a large umbelliferous plant growing in several parts of Asia; the properties of which are described under the article *FENNEL*.

ASAPH (St), a city in Flintshire, with a bishop's see; on which account principally it deserves notice, being in itself but a poor place. As a bishopric, it is of great antiquity, and was founded about the year 560, by Kentigern, a Scotsman, bishop of Glasgow. He began the church on the banks of the river Elwy, whence it is called by the Welsh *Land Elwy*, and in Latin *Elwenfis*. Kentigern returning into Scotland, left a holy man his successor, St Asaph. Who was his successor is uncertain, as there are no records that mention it; and it seems rather probable that the religious settled here had been necessitated to remove to some more peaceful abode, as the country was frequently the seat of war between the English and the Welsh. This see was formerly a very wealthy one; but its revenues were greatly lessened by the profusion of bishop Parfew, who alienated much of the lands belonging to this bishopric.

This diocese doth not contain any one whole county; but consists of part of Denbigh, Flint (where its church is), Montgomery, and Merioneth shires, and a small part of Shropshire; wherein are 121 parishes, and 131 churches and chapels, most of which are in the immediate patronage of the bishop. This see hath but one archdeaconry, viz. that of St Asaph, which is united to the bishopric, for the better maintenance thereof. This see is valued in the king's books at L. 187, 11s. 6d. but computed to be worth annually L. 1500. The tenth of the clergy comes to L. 186: 19: 6½. To this cathedral belongs a bishop, a dean, archdeacon, chancellor, &c.

ASAPPES, or AZAPES, an order of soldiers in the Turkish army, whom they always expose to the first shock of the enemy; to the end that the enemy being thus fatigued, and their swords blunted, the spahis and janisaries may fall on and find an easy conquest. The word is derived from the Turkish *saph*, which signifies *rank*, from whence they have formed *asphaph*, "to range in battle." The asappes are said to be held of so little value, that they frequently serve as bridges for the cavalry to pass over in bad roads, and as fascines to fill up the ditches of places besieged. They travel on foot, and have no pay but the plunder they can get from the enemy.

ASAR-ADDON, or ESAR-HADDON, the son of Senacherib, succeeded his father about 712 years before the Christian æra, and united the kingdoms of Nineveh and Babylon. He rendered himself master of Syria; sent a colony to Samaria; and his generals took king Manasses, and carried him loaded with chains to Babylon. Asar Addon died after a reign of 12 years.

ASARINA. See CHELONE.

ASAROTA, *ασαρωτα*, from *α* and *σαιρω*, *I sweep*, a kind of painted pavements in use before the invention of mosaic work. The most celebrated was that at Pergamus, painted by Sesus, and exhibiting the appearance of crumbs, as if the floor had not been swept after din-

ner, whence, according to Pliny, the denomination. Perrault supposes them to have been a black kind of pavement of a spongy matter.

ASARUM, ASARABACCA: A genus of the monogynia order, belonging to the dodecandria class of plants. The calyx is trifid or quadrifid, and rests on the germen; there is no corolla; the capsule is leathery and crowned. —The species are three; the *Europeum*, the *Canadense*, and *Virginicum*. The first species grows naturally in some parts of England. It hath thick fleshy jointed roots; the leaves grow singly upon short footstalks, which arise immediately from the root: the flowers grow upon very short footstalks close to the ground, so are hid under the leaves. They have a bell-shaped impalement, of a worn-out purple colour, which is cut in three at the top, where it turns backward. It delights in a moist shady place, and may be propagated by parting the roots in autumn. The two other species have no remarkable properties.

Medicinal Uses. The dried roots of this plant have been generally brought from the Levant; those of our own growth being supposed weaker. Both the roots and leaves have a nauseous, bitter, acrimonious, hot taste: their smell is strong, and not very disagreeable. Given in substance from half a dram to a dram, they evacuate powerfully both upwards and downwards. It is said, that tinctures made in spirituous menstrua, possess both the emetic and cathartic virtues of the plant; that the extract obtained by inspissating these tinctures, acts only by vomit, and with great mildness; that an infusion in water proves cathartic, rarely emetic; that aqueous decoctions made by long boiling, and the watery extract, have no purgative or emetic quality, but prove notable diaphoretics, diuretics, and emmenagogues.

The principal use of this plant among us is a sternutatory. The root of asarum is perhaps the strongest of all the vegetable errhines, white hellebore itself not excepted. Snuffed up the nose, in the quantity of a grain or two, it occasions a large evacuation of mucus, and raises a plentiful spitting. The leaves are considerably milder, and may be used to the quantity of three, four, or five grains. Geoffroy relates, that after snuffing up a dose of this errhine at night, he has frequently observed the discharge from the nose to continue for three days together; and that he has known a paralysis of the mouth and tongue cured by one dose. He recommends this medicine in stubborn disorders of the head proceeding from viscid tenacious matter, in palsies, and in soporific distempers. The leaves are the principal ingredient in the *pulvis sternutatorius*, or *pulvis asari compositus*, as it is now called, of the shops.

ASBAMEA, a fountain of Cappadocia, near Tyana, sacred to Jupiter, and to an oath. Though this fountain bubbled up, as in a state of boiling, yet its water was cold; and never ran over, but fell back again: (Philostratus, Ammian).

ASBESTOS, a sort of native fossil stone, which may be split into threads and filaments, from one inch to ten inches in length, very fine, brittle, yet somewhat tractable, silky, and of a greyish colour, not unlike talc of Venice. It is almost insipid to the taste, indissoluble in water, and endued with the wonderful property of remaining unconsumed in the fire, which only whitens it. There are some sorts of asbestos whose

Asarum
||
Asbestos.

Asbestos. whose filaments are rigid and brittle; others more flexible.

The industry of mankind has found a method of working this untoward mineral, and employing it in divers manufactures, chiefly cloth and paper. The manufacture is undoubtedly difficult enough. Pliny calls the *asbestos inventu rarum, textu difficilimum*. Wormius assures us, that the method of making cloth of *asbestos* is now entirely unknown. And indeed one would scarce imagine the thing practicable, without the mixture of some other pliant matter, as wool, hemp, or flax, along with the *asbestos*, the filaments of this letter appearing too coarse and brittle to make any tolerable fine work. However this be, Bapt. Porta assures us, that in his time the spinning of *asbestos* was a thing known to every body at Venice. Sig. Castagnatta, superintendant of some minutes in Italy, is said to have carried the manufacture to such perfection, that his *asbestos* was soft and tractable, much resembling lamb-skin dressed white; he could thicken and thin it at pleasure, and thus either make it into a very white skin or a very white paper.

This kind of linen cloth was chiefly esteemed by the ancients; though then better known and more common than among us, being held equally precious with the richest pearls: nor is it now of mean value, even in the country where it is most generally made, a China cover (*i. e.* a piece of 23 inches and three-quarters long) being worth 80 tale, *i. e.* L. 36: 13: 4. Pliny says, he himself had seen napkins thereof, which, being taken foul from the table after a feast, were thrown into the fire, and by that means were better scoured than if they had been washed in water, &c. But its principal use, according to Pliny, was for the making of shrouds for royal funerals to wrap up the corpse, so that the ashes might be preserved distinct from those of the wood, &c. whereof the funeral pile was composed: and the princes of Tartary, according to the accounts in the Philosophical Transactions, still use it at this day in burning their dead. Some of the ancients are said to have made themselves cloths of it, particularly the Brachmans among the Indians. The wicks for their perpetual lamps, according to Dr Lister, were also made of it: some to this day use it for the wicks of such lamps as they would not have any trouble with; because the *asbestos* never wasting, there is no occasion for shifting the wick. Septalla, canon of Milan, had thread, ropes, nets, and paper, made of the *asbestos*. A handkerchief or pattern of this linen was long since presented to the Royal Society, a foot long and half a foot broad. This gave two proofs of its resisting fire; though in both experiments, it lost above three drams in its weight. When taken out ret hot, it did not burn a piece of white paper on which it was laid. Mr Vilette pretends that his large burn-in concave usually virtifies the *asbestos*.

The method of preparing the incombustible paper and cloth is thus described by Ciampini: The stone is laid to soak in warm water; then opened and divided by the hands, that the earthy matter may be washed out. The abolution being several times repeated, the flax-like filaments are collected and dried; and they are most conveniently spun with an addition of flax. Two or three filaments of the *asbestos* are easily twisted along with the flaxen thread, if the operator's fin-

gers are kept oiled. The cloth also, when woven, is best preserved by oil from breaking or wasting. On exposure to the fire, the flax and the oil burn out, and the cloath remains pure and white. Probably from the dissipation of some extraneous matter of this kind proceeded the diminution of weight in the handkerchief just recited; for pure *asbestos* leaves nothing. The shorter filaments which separate in washing the stone may be made into paper in the common manner.

The *asbestos* is found in Crete and Cyprus; in Tartary; at Namur in the Low Countries; in Thuringia among the mines; in the Old Noricum; in Egypt; in the mountains of Arcadia; at Puteoli; in the island of Corfica; in the island of Anglesey in Wales; in Aberdeenshire in Scotland; at Montaubon in France; and in the kingdom of Siberia.

ASCALON, an ancient city, and one of the five satrapies or principalities of the Philistines; situated on the Mediterranean, 43 miles to the south west of Jerusalem (Antonine), between Azotus to the north and Gaza to the south. The birth-place of Herod the Great, thence surnamed *Ascalonita* (Stephanus). Famous for its scallions, which take name from this town (Strabo, Pliny.) Now *Scalona*. E. Long. 34. 30. Lat. 31. 30.

ASCANIUS, the son of Æneas and Creusa, succeeded his father in the kingdom of the Latins, and defeated Mezentius king of the Tuscans, who had refused to conclude a peace with him. At length he founded Alba Longa; and died about 1139 years before the Christian æra, after a reign of 38 years.

ASCARIS, in zoology, a genus of insects belonging to the order of *vermes intestina*. The body of the *ascaris* is cylindrical, filiform, and tapers at both ends. The species are two, *viz.* 1. The *vermicularis*, with faint-annular rugæ, and the mouth transverse, is about a quarter of an inch long, and thicker at one end than the other. It is found in boggy places, in the roots of putrid plants, and very frequently in the rectum of children and horses. It emaciates children greatly, and is sometimes vomited up. 2. The *lumbricoides* is about the same length with the *lumbricus terrestris*, or common earth worm; but it wants the protuberant ring towards the middle of the body, the only mark by which they can properly be distinguished. The body of the *lumbricoides* is cylindrical, and subulated at each extremity; but the tail is somewhat triangular. The *lumbricoides* is the worm which is most commonly found in the human intestines. It is viviparous, and produces vast numbers. For the method of expelling these two kinds of insects, see *MEDICINE-Index*.

ASCENDANT, in astrology, denotes the horoscope, or the degree of the ecliptic which rises upon the horizon at the time of the birth of anyone. This is supposed to have an influence on the person's life and fortune, by giving him a bent and propensity to one thing more than another.

In the celestial theme, this is also called the *first house*, the *angle of the East* or *Oriental angle*, and the *significator of life*.—Such a planet ruled in his *ascendant*: Jupiter was in his *ascendant*, &c.—Hence the word is also used in a moral sense, for a certain superiority which one man has over another, from some unknown cause.

ASCENDANTS, in law, are opposed to descendants

Ascending, in succession; *i. e.* when a father succeeded his son, or an uncle his nephew, &c. heritage is said to ascend, or go to ascendants.

ASCENDING, in astronomy, is said of such stars as are rising above the horizon in any parallel of the equator.

ASCENDING Latitude, is the latitude of a planet when going towards the north pole.

ASCENDING Node, is that point of a planet's orbit, wherein it passes the ecliptic, to proceed northward. This is otherwise called the *northern node*, and represented by this character Ω .

ASCENDING Vessels, in anatomy, those which carry the blood upwards; as the aorta descendens. See *ANATOMY*, n° 123.

ASCENSION, in astronomy, is either right or oblique. Right ascension of the sun, or a star, is that degree of the equinoctial, counted from the beginning of Aries, which rises with the sun or star in a right sphere. Oblique ascension is an arch of the equator intercepted between the first point of Aries and that point of the equator which rises together with a star in an oblique sphere.

ASCENSION Day, a festival of the Christian Church, held ten days before Whitsuntide, in memory of our Saviour's ascension into heaven after his resurrection.

ASCENSION Island, a barren island on the coast of Africa, lying in W. Long. 17. 20. S. Lat. 7. 5. The following account is given of it by Mr Forster. "This island was first discovered in 1501, by João de Nova Galego, a Portuguese navigator, who named it *Ilha de Nossa Senhora de Conceição*. The same admiral, on his return to Portugal in 1502, discovered the island of St Helena, which obtained that name from the day of the discovery. Ascension was seen a second time by Alfonso d'Albuquerque on his voyage to India in 1503, and then received the name it now bears; but was already at that time in the same desolate condition as at present. We sent several parties on shore, who passed the night on the watch for turtles, which came to lay their eggs on the sandy shores. The dreariness of this island surpassed all the horrors of Easter Island and Tierro del Fuego, even without the assistance of snow. It was a ruinous heap of rocks, many of which, as far we could discern from the ship, seemed to be totally changed by the fire of a volcano. Nearly in the centre of the island rises a broad white mountain of great height, on which we discerned some verdure by the help of our glasses, from whence it has obtained the name of *Green Mountain*.

"We landed early in the morning among some rocks, the surf being always immensely high on the great beach; which consists of minute shell-sand, chiefly of a snowy white, very deep, dry, and intolerable to the eyes when the sun shines. We ascended among heaps of black cavernous stone, which perfectly resembles the most common lavas of Vesuvius and Iceland, and of which the broken pieces looked as if they had been accumulated by art. The lava currents cooling very suddenly, may easily be imagined to produce such an effect. Having ascended about 12 or 15 yards perpendicular, we found ourselves on a great level plain of six or eight miles in circuit; in the different corners of which we observed a large hill of an exact conical shape, and of a reddish colour, standing perfectly insu-

lated. Part of the plain between these conic hills was covered with great numbers of smaller hillocks, consisting of the same wild and ragged lava as that near the sea, and ringing like glass when two pieces are knocked together. The ground between the heaps of lava was covered with a black earth, on which we walked very firmly; but when these heaps did not appear, the whole was a red earth, which was so loose, and in such dry minute particles, that the wind raised clouds of dust upon it. The conic hills consisted of a very different sort of lava, which was red, soft, and crumbling into earth. One of these hills stands directly in front of the bay, and has a wooden cross on its summit, from whence the bay is said to take its name. Its sides are very steep, but a path near three quarters of a mile long winds round it to the summit. After examining this remarkable country a little longer, we concluded, with a great degree of probability on our side, That the plain on which we stood was once the crater or seat of a volcano, by the accumulation of whose cinders and pumice-stones the conic hills had been gradually formed: that the currents of lava which we now saw divided into many heaps, had perhaps been gradually buried in fresh cinders and ashes; and the waters coming down from the interior mountain in the rainy season had smoothened every thing in their way, and filled up by degrees the cavity of the crater. The rocky black lava was the residence of numberless men-of-war birds and boobies, which sat on their eggs, and suffered us to come close to them.

"About eight in the evening, it being then quite dark, a small vessel came into the bay, and anchored directly within us. Captain Cook having hailed her repeatedly, received in answer that she was the *Lucretia*, a New York sloop, which had been at Sierra Leon, and was now come to catch turtles, in order to sell them at the windward islands of the West Indies. A lieutenant was sent on board, who learned from the master, that he had taken our ship to be a French Indiaman, and was very desirous of trading with English India ships, in which he was disappointed by the company's regulations. He dined with our officers the next day, but on the 31st at day-break left the island. On the 30th in the morning, we landed a second time; and, crossing the plain, arrived at a prodigious lava-current, intersected by many channels from six to eight yards deep, which bore strong marks of being worn by vast torrents of water, but were at present perfectly dry, the sun being in the northern hemisphere. In these gullies we found a small quantity of soil consisting of a black volcanic earth, mixed with some whitish particles gritty to the touch. Here we saw some small bunches of purslane, and a species of grass (*panicum sanguineum*) which found sufficient nutriment in the dry soil. Having at last, with great fatigue, climbed over this extensive and tremendous current of lava, which was much more solid than the heaps nearer to the sea, we came to the foot of the Green Mountain, which even from the ships place in the bay we had plainly distinguished to be a different nature from all the rest of the country. Those parts of the lava which surrounded it were covered with a prodigious quantity of purslane, and a kind of new fern (*lonchites Adscensionis*), where several flocks of wild goats were feeding. The great mountain is divided in its extremities,

by

Ascension
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Ascent.

by various clefts, into several bodies; but in the centre they all run together, and form one broad mass of great height. The whole appears to consist of a gritty tophaceous lime-stone, which has never been attacked by the volcano, but probably existed prior to its eruption; its sides are covered with a kind of grass, peculiar to the island, which Linnæus has named *aristida Adscensionis*. We likewise observed several flocks of goats feeding on it; but they were all excessively shy, and ran with surprising velocity along tremendous precipices, where it was impossible to follow them. The master of the New-York sloop acquainted us, that there is a spring of water on one part of this mountain, which falls down a great precipice, and is afterwards absorbed in the sand. I am almost persuaded, that, with a little trouble, Ascension might shortly be made fit for the residence of men. The introduction of furze (*ulex Europæus*), and of a few other plants which thrive best in a parched soil, and are not likely to be attacked by rats or goats, would soon have the same effect as at St Helena. The moisture attracted from the atmosphere by the high mountains in the centre of the island, would then no longer be evaporated by the violent action of the sun, but collect into rivulets, and gradually supply the whole island. A sod of grasses would every where cover the surface of the ground, and annually increase the stratum of mould, till it could be planted with more useful vegetables.

"We returned gradually to Cross Bay, in the heat of noon, over the plain; having a space of more than five miles to traverse, where the sun burnt and blistered our faces and necks, and heated the soil to such a degree, that our feet were likewise extremely sore. About three o'clock we arrived at the water's side; and after bathing in a small cove among a few rocks, we made the signal for a boat, and were taken on board. The next forenoon we made another small excursion, in company with Captain Cook, towards the Green Mountain; but we were all of us so much fatigued, that we could not reach it. We made no new observations in the course of this day, the nature of the island being dreary beyond description in its outskirts."

ASCENSIONAL DIFFERENCE, the difference between the right and oblique ascension of the same point to the surface of the sphere.

ASCENT, in a general sense, implies the motion of a body upwards, or the continual recess of a body from the earth. The Peripatetics attribute the spontaneous ascent of bodies to a principle of levity inherent in them. The moderns deny any such thing as spontaneous levity; and show, that whatever ascends, does it in virtue of some external impulse or extrusion. Thus it is that smoke and other rare bodies ascend in the atmosphere; and oil, light woods, &c. in water: not by any external principle of levity, but by the superior gravity or tendency downwards of the parts of the medium wherein they are. The ascent of light bodies in heavy mediums is produced after the same manner as the ascent of the lighter scale of a balance. It is not that such scale has an internal principle whereby it immediately tends upwards; but it is impelled upwards by the preponderancy of the other scale; the excess of the weight of the one having the same effect,

by augmenting its impetus downwards, as so much real levity in the other; by reason the tendencies mutually oppose each other, and that action and reaction are always equal.

ASCENT of Bodies on Inclined Planes, the reader will find explained under MECHANICS; Ascent of Fluids, under HYDROSTATICS; and Ascent of Vapours, under the article EVAPORATION.

ASCESIS, properly denotes exercise of the body. It is formed from the verb *ασκειν*, used by the ancients in speaking of the sports and combats of the athlete.

ASCESIS is also used by philosophers, to denote an exercise conducive to virtue, or to the acquiring a greater degree of virtue. This is particularly denominated the *philosophical ascesis*, because practised chiefly by philosophers, who make a more peculiar profession of improving themselves in virtue; on the model whereof, the ancient Christians introduced a religious Ascesis.

ASCETERIUM, in ecclesiastical writers, is frequently used for a monastery, or place set apart for the exercises of virtue and religion. The word is formed from *ascesis*, "exercise;" or *ascetra*, "one who performs exercise." Originally it signified a place where the athlete or gladiators performed their exercises.

ASCETIC, an ancient appellation given to such persons as, in the primitive times, devoted themselves more immediately to the exercises of piety and virtue, in a retired life; and particularly to prayer, abstinence, and mortification. The word is derived from *ασκεω*, *exercio*, "I exercise." Afterwards, when the monks came in fashion, this title was bestowed upon them; especially upon such of them as lived in solitude.

ASCETIC is also a title of several books of spiritual exercises.—As the *Asciatics*, or devout exercises of St Basil, archbishop of Cæsarea in Cappadocia.

We also say the *ascetic* life, meaning the exercise of prayer, meditation, and mortification.

ASCHAFENBURG, a town of Germany, seated on the river Maine, in the circle of the lower Rhine, and territory of the elector of Mentz, who has a palace there. It is memorable for being the place where the king of Great Britain took up his quarters the night before the battle of Dettingen. E. Long. 9. 35. N. Lat. 50. 14.

ASCHAM (Roger), was born at Kirby-Wiske, near North Allerton in Yorkshire, in the year 1516. His father was steward to the noble family of Scroop. Our author Roger was educated in the family of Sir Anthony Wingfield, who, about the year 1530, sent him to St John's College, Cambridge, where he was soon distinguished for his application and abilities. He took his degree of Bachelor of Arts at the age of 18, was soon after elected fellow of his college, and in 1536 proceeded Master of Arts. In 1544, he was chosen university orator; and, in 1548, was sent for to court, to instruct the lady Elizabeth (afterwards queen) in the learned languages. In the year 1550, he attended Sir Richard Morysine, as secretary, on his embassy to the emperor Charles V. at whose court he continued three years, and in the mean time was appointed Latin secretary to king Edward VI. But upon the death of that prince, he lost his preferment and

Ascent
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Ascham.

Ascham
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Afcii.

and all his hopes, being professedly of the reformed religion; yet, contrary to his expectations, he was soon after, by the interest of his friend lord Paget, made Latin secretary to the king and queen. In June 1554, he married Mrs Margaret How, a lady of a good family, with whom he had a considerable fortune. It is very remarkable of Mr Ascham, that, tho' he was known to be a Protestant, he continued in favour not only with the ministry of those times, but with Queen Mary herself. Upon the accession of Queen Elizabeth, he was not only confirmed in his post of Latin secretary, but was constantly employed as preceptor to her Majesty in the Greek and Latin languages. He died in the year 1568, much regretted, especially by the Queen, who said she had rather have lost L. 10,000. Camden and some other writers tell us, that he had a great propensity to dice and cock-fighting. He certainly died poor.—He wrote,

1. *Toxophilus*. The scholae or partitions of shooting, contained in two bookes, written by Roger Ascham, 1544, and now newly perused. Pleasaunt for all gentlemen and yeomen of England, &c. Lond. 1571. Whilst at the university he was fond of archery by way of exercise and amusement, for which he was censured; and on that account he sat down to write this book, which was dedicated to Henry VIII. who settled a pension of L. 10 per annum on the author. It is rather whimsical; but is admirably well written and full of learning. 2. A report and discourse, written by Roger Ascham, of the affairs and state of Germany, and the Emperor Charles his court, &c. 4to. A valuable curiosity. 3. *The schoolmaster*. First printed in 1573, 4to. Mr Upton published an edition with notes in 1711. It has uncommon merit; abounding in great good sense, as well as knowledge of ancient and modern history: it is also expressive of the great humanity of the author, who was for making the paths of knowledge as level and pleasant as possible, and for trying every gentle method of enlarging the mind and winning the heart. 4. *Latin epistles*. First published by Mr Grant 1576; have since passed many editions: the best is that of Oxford in 1703. Much admired on account of the style; and esteemed almost the only classical work of that kind written by an Englishman. 5. *Apologia contra misfam*. 1577, 8vo.

ASCIBURGIUM (anc. geog.), mentioned by Tacitus, supposed to be one of the 50 citadels built on the Rhine: who adds, some imagined it was built by Ulysses. Here was a Roman camp and a garrison. To its situation on the banks of the Rhine answers a small hamlet, now called *Asburg*, not far from Meurs, in the duchy of Cleves.

ASCIDIA, a genus of animals belonging to the order of vermes mollusca. The body is cylindrical, and fixed to a shell, rock, &c. It has two apertures; one on the summit, the other lower, forming a sheath. There are six species of this animal, viz. the papillosum, gelatinosum, intestinalis, quadridentata, rustica, and echinata: only one of which, viz. the rustica*, is found in the British seas. Animals of this genus have the faculty of squirting out the water they taken in. The expansion and contraction of their bodies occasion their assuming various forms.

ASCII, among geographers, an appellation given

to those inhabitants of the earth who, at certain seasons of the year, have no shadow; such are all the inhabitants of the torrid zone, when the sun is verticle to them.

ASCITÆ (from *ασκος* a bag or bottle), in antiquity, a sect or branch of Montanists, who appeared in the second century. They were so called, because they introduced a kind of Bacchanals into their assemblies, who danced round a bag or skin blowed up; saying, they were those new bottles filled with new wine whereof our Saviour makes mention, Matth. ix. 17.—They are sometimes also called *Ascodrogita*.

ASCITES, in medicine, the dropfy of the abdomen. See *MEDICINE-Index*.

ASCLEPIA, a festival of *Æsculapius* the god of physick, observed particularly at Epidaurus, where it was attended with a contest between the poets and musicians, whence it was likewise called *ἱερός ἄγας*, the sacred contention.

ASCLEPIAD, in ancient poetry, a verse composed of four feet, the first of which is a spondee, the second a choriambus, and the two last dactyls; or of four feet and a cæsura, the first a spondee, the second a dactyl, after which comes the cæsura, then the two dactyls; as, *Mæcenas atavis edite regibus*.

ASCLEPIADES, one of the most celebrated physicians among the ancients, was a native of Prusa, in Bithynia; and practised physick at Rome, under Pompey, 96 years before the Christian æra. He was the head of a new sect; and, by making use of wine and cold water in the cure of the sick, acquired a very great reputation. He wrote several books, which are frequently mentioned by Galen, Celsus, and Pliny; but they are now lost.

ASCLEPIADES, a famous physician under Hadrian, of the same city with the former. He wrote several books concerning the composition of medicines; both internal and external.

ASCLEPIAS, SWALLOW-WORT: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 30th order, *Contortæ*. The generic character is taken from five oval, concave, horn-like nectaria which are found in the flower. The

Species are 19; of which the following are the most remarkable. 1. The alba, or common swallow-wort, has a root composed of many strong fibres connected at top like those of asparagus, from whence arise many stalks, in number proportional to the size of the roots, which grow two feet high, and are very slender at the top: the leaves are placed opposite by pairs; the flowers are white, growing in umbels near the top of the stalk, from whence are sent out smaller umbels. After the flower is past, the two germens become long pointed pods, inclosing many compressed seeds lying imbricatum, which are crowned with a soft white down. It flowers in June, and the seeds ripen in September. It is a native of the south of France, Spain, and Italy. 2. The Syriaca, or greater Syrian dogbane, is a perennial plant, which sends up several upright stalks in the spring, about two feet high, garnished with oval leaves growing opposite; at the top of the stalks the umbels of flowers are produced, which are of a bright purple colour, making a pretty appearance, but are not succeeded by pods in England. 3. The curassavica, or bastard ipecacuanha, is a native of the warm parts of

Ascitæ
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Asclepias

Aselepias
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Ascriptitii.

of America. It rises to the height of five or six feet, with upright stems, and smooth oblong leaves placed opposite. Towards the top of the branches the umbels of flowers come out, which stand erect; the petals of the flowers are of a scarlet colour, and the horny nectariums in the middle are of a bright saffron colour, which make a pretty appearance; and there is a succession of flowers on the same plant from June to October. The flowers are succeeded by long taper pods, filled with seeds crowned with a soft down, which ripen late in autumn. The first two species are hardy; but the last one is tender, and therefore must be preserved in a stove.

Medicinal Uses, &c. The root of the first species is used in medicine. It is reckoned by botanists a species of dogbane; from all the poisonous sorts of which it may be distinguished, by yielding a limpid juice, whilst that of the others is milky. The root has a strong smell, especially when fresh, approaching to that of valerian, or nard; the taste is at first sweetish and aromatic, but soon becomes bitterish, sub-acrid, and nauseous. This root is esteemed sudorific, diuretic, and emmenagogue: it is also frequently employed by the French and German physicians as an alexipharmic, and sometimes as a succedaneum to contrayerva, whence it has received the name of *contrayerva Germanorum*. Among us it is very rarely made use of: it appears from its sensible qualities to be a medicine of much the same kind with valerian, which is indisputably preferable to it. The root of the third species has been sometimes sent over from America instead of that of ipecacuanha, and mischievous effects have been produced by it. Those who cultivate this plant ought to be careful that none of its milky juice mix with any thing which is taken inwardly.

ASCODUTÆ, in antiquity, a sect of heretics, in the second century, who rejected all use of symbols and sacraments, on this principle, That incorporeal things cannot be communicated by things corporeal, nor divine mysteries by any thing visible.

ASCOLI, formerly *Asculum Apulum*, a pretty large and populous town of Italy, in the marche of Ancona, and territory of the church; it is a bishop's see, and seated on a mountain, at the bottom of which runs the river Fronto. E. Long. 15. 20. N. Lat. 42. 47.

Ascoli de Satriano, formerly *Asculum Picenum*, an episcopal city of Italy, in the kingdom of Naples; seated on a mountain. E. Long. 15. 5. N. Lat. 42. 8.

ASCOLIA, in Grecian antiquity, a festival celebrated by the Athenian husbandmen in honour of Bacchus, to whom they sacrifice a he goat, because it destroys the vines (*Ovid. Fast.* 1. 357); and to show the greater indignity to an animal hated by Bacchus, the peasants, after having killed him, made a foot-ball of his skin. Virgil has beautifully described the occasion of the sacrifice, and manner of celebrating the festival, *Georg.* ii. 380.

ASCRIPITII, or ADSCRIPITII, were a kind of villeins, who, coming from abroad, settled in the lands of some new lord, whose subjects or servants they commence; being so annexed to the lands, that they may be transferred and sold with the same. Ascriptitii is sometimes also used in speaking of aliens or foreigners newly admitted to the freedom of a city or country.

ASCRIPITII was also used in the military laws for the recruits appointed to supply the losses of the legions, called also *Accensi*. *Ascriptitii*
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Ash.

ASCRIVIUM (anc. geog.), a town of Dalmatia, on the Sinus Rhizicus (Pliny, Ptolemy): Now *Cattaro* (Harduin); the capital of the territory of Cattaro, in Venetian Dalmatia. E. Long. 19. 20. N. Lat. 45. 25.

ASCULUM APULUM (anc. geog.), a town of Apulia much mentioned in the war with Pyrrhus (Florus, Plutarch): Now called *Ascoli*; a city of the Capitanata, in the kingdom of Naples. E. Long. 16. 30. Lat. 41. 15.

ASCULUM Picenum (anc. geog.), a town of the Piceni (Cæsar); and the capital (Florus): Now *Ascoli*, in the march of Ancona, on the river Tronto. E. Long. 15. 5. N. Lat. 42. 50.

ASCYRUM, PETER'S-WORT: A genus of the polyandria order, belonging to the polydelphia class of plants; and in the natural method ranking under the 20th order, *Rotaceæ*. The calyx consists of four leaves; the corolla has four petals; the filaments are numerous, and divided into four bundles. There are three species, the *crux andree*, the *hypericoides*, and the *villosum*, all natives of the West Indies, or America, but possessing no property worthy of notice.

ASDRUBAL, the name of several Carthaginian generals. See *CARTHAGE*.

ASEKI, or ASEKAI, the name which the Turks give to the favourite sultaneffes who have brought forth sons. These are greatly distinguished above others in their apartments, attendants, pensions, and honours. They have sometimes shared the government. The sultana who first presents the emperor with a male child, is reckoned the chief favourite, is called *buyuk aseki*, and ranks as a legitimate wife: though, from the time of Bajazet I. the sultans are forbid to marry by a public law, which Solymán II. violated in favour of Roxalana.

ASELLUS, in zoology, the trivial name of a species of oniscus. See *ONISCUS*.

ASGILL (John), a late humorous writer, was bred to the law, and practised in Ireland with great success. He was there elected a member of the house of commons, but was expelled for writing a treatise on the possibility of avoiding death; and being afterwards chosen a member for the borough of Bramber in Sussex, he was also on the same account expelled the parliament of England. After this, he continued 30 years a prisoner in the Mint, Fleet, and King's-bench; during which time he published a multitude of small political pamphlets, several of which were in defence of the succession of the house of Hanover, and against the pretender. He died in the rules of the King's-bench, in the year 1738; when he was upwards of fourscore.

ASH, in botany. See *FRAXINUS*.

Ash-Hole, among chemists, is the lowest part of a furnace; and is intended to receive the ashes falling from the fire, and to give a passage to the air which is to be introduced into the furnace, to keep up the combustion.

Ash-Wednesday, the first day of Lent; supposed to have been so called from a custom in the church, of sprinkling ashes that day on the heads of penitents then admitted to penance. See *LENT*.

ASH-

Ashborn
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Ashford

ASHBORN, a town in Derbyshire, seated between the rivers Dove and Compton, over which there is a stone-bridge, in a rich soil. It is a pretty large town, though not so flourishing as formerly. W. Long. 1. 35. N. Lat. 53. 0.

ASHBURTON, a town in Devonshire. It sends two members to parliament, and is one of the four stannery towns. It is seated among the hills, which are remarkable for tin and copper; and has a very handsome church; as also a chapel, which is turned into a school. It gives title of Baron to Dunning the late solicitor-general, whose son now enjoys it. W. Long. 3. 10. N. Lat. 50. 30.

ASHBY DE LA ZOUCH, a market-town in Leicestershire, situated in W. Long. 1. 20. N. Lat. 52. 40. It had a castle which was long in the possession of the family of de la Zouch. It afterwards fell into the hands of Edward IV. who granted it to Sir Edward Hastings, created baron Hastings, with licence to make a castle of the manor-house, to which he adjoined a very high tower. It was demolished in 1648; but a great part of the tower is still standing. It now belongs to the Earl of Huntingdon.

ASHDOD, or AZOTUS. See AZOTUS.

ASHES, the earthy particles of combustible substances after they have been burnt.

If the ashes are produced from vegetable bodies, they contain a considerable quantity of fixed salt, blended with the terrene particles: and from these ashes the fixed alkaline salts called *pot-ash*, *pearl-ash*, &c. are extracted. See *POTASH*, &c.

The ashes of all vegetables are vitrescible, and found to contain iron.—They are also an excellent manure for cold and wet grounds. See *AGRICULTURE*, n^o 20.

Several religious ceremonies depend upon the use of ashes. St. Jerome relates, that the Jews in his time rolled themselves in ashes, as a sign of mourning. To repent in sackcloth and ashes, is a frequent expression in Scripture for mourning and being afflicted for our sins. There was a sort of lye and lustral water made with the ashes of an heifer sacrificed upon the great day of expiation; the ashes whereof were distributed to the people, and this water was used in purifications, as often as any touched a dead body, or was present at funerals, (Numb. xix. 17.) Tamar after the injury received from her brother Amnon, covered her head with ashes, (2 Sam. xiii. 19.) The Psalmist in great sorrow says, that he had eaten ashes as if it were bread, (Ps. cii. 9.); which, however, is to be considered as an hyperbole. He sat on ashes, he threw ashes on his head; his food, his bread, was spoiled with the ashes wherewith he was covered.

The ancient Persians had a sort of punishment for some great criminals, which consisted in executing them in ashes. The criminal was thrown headlong from a tower 50 cubits high, which was filled with ashes to a particular height (2 Mac. xiii. 5, 6.) The motion which the criminal used to disengage himself from this place, plunged him still deeper into it; and this agitation was further increased by a wheel which stirred the ashes continually about him till at last he was stifled.

ASHFORD, a market-town of Kent situated about 12 miles south-west of Canterbury, in E. Long. 0. 45. N. Lat. 51. 15.

ASHLAR, a term used among builders; by which they mean common or free stones, as they come out of the quarry, of different lengths and thickneses.

ASHLERING, among builders, signifies quartering, to lath to, in garrets, about two and a half, or three feet high, perpendicular to the floor, up to the under side of the rafters.

ASHMOLE (Elias), a great antiquary and herald, founder of the Ashmolean museum at Oxford, was born at Litchfield in Staffordshire, 1617. In the early part of his life, he practised in the law; and in the civil war had a captain's commission under the king, and was also comptroller of the ordinance. He married the lady Mainwaring in 1649, and settled at London; where his house was frequented by all the learned and ingenious men of the time. Mr Ashmole was a diligent and curious collector of manuscripts. In the year 1650, he published a treatise written by Dr Arthur Dee, relating to the philosopher's stone; together with another tract on the same subject, by an unknown author. About the same time, he was busied in preparing for the press a complete collection of the works of such English chemists as had till then remained in manuscript. This undertaking cost him great labour and expence; and at length the work appeared, towards the close of the year 1652. He proposed at first to have carried it on to several volumes; but he afterwards dropped this design, and seemed to take a different turn in his studies. He now applied himself to the study of antiquity and records: he was at great pains to trace the Roman road, which in Antoninus's Itinerary is called *Bennevanna*, from Weedon to Leitchfield, of which he gave Mr Dugdale an account in a letter. In 1658, he began to collect materials for his history of the order of the garter, which he lived to finish, and thereby did no less honour to the order than to himself. In September following, he made a journey to Oxford, where he set about giving a full and particular description of the coins presented to the public library by Archbishop Laud.

Upon the restoration of King Charles II. Mr Ashmole was introduced to his majesty, who received him very graciously; and on the 18th of June 1660, bestowed on him the place of Windsor herald. A few days after, he appointed him to give a description of his medals, which were accordingly delivered into his possession, and King Henry VIII.'s closet was assigned for his use. On the 15th of February, Mr Ashmole was admitted a fellow of the royal society; and, on the 9th of February following, the king appointed him secretary of Surinam, in the West Indies. On the 19th of July 1699, the university of Oxford, in consideration of the many favours they had received from Mr Ashmole, created him doctor of physic by diploma, which was presented to him by Dr Yates, principal of Brazen Nose college. On the 8th of May 1672, he presented his "Institution, laws, and ceremonies, of the most noble order of the garter," to the king; who received it very graciously, and as a mark of his approbation, granted him a privy seal for L. 400 out of the custom of paper. On the 26th January 1679, a fire broke out in the Middle Temple, in the next chamber to Mr Ashmole's, by which he lost a noble library, with a collection of 9000 coins, ancient and modern, and a vast repository of seals, charters, and other antiquities and curiosities; but

Ashlar
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Ashmole.

Plate LVII.



A. Bell & Son

Asia. but his manuscripts and his most valuable gold medals were luckily at his house at Lambeth. In 1683, the university of Oxford having finished a magnificent repository near the theatre, Mr Ashmole sent thither his curious collection of rarities; which benefaction was considerably augmented by the addition of his manuscripts and library at his death, which happened at Lambeth, the 18th of May, in the 76th year of his age. He was interred in the church of Great-Lambeth, in Surry, on the 26th of May 1692, and a black marble stone laid over his grave, with a Latin inscription.

Besides the works which we have mentioned, Mr Ashmole left several which were published since his death, and some which remain still in manuscript.

ASIA, is one of the three general parts of our continent, and one of the four of the whole earth. It is separated from Europe by the Mediterranean sea, the Archipelago, the Black Sea, the Palus Meotis, the Don, and the Dwina, which fall into the White Sea; and from Africa, by the Arabic Gulph or Red Sea, and the Isthmus of Suez. All the other parts are surrounded by the ocean. The late discoveries show that it does not join to America, though it extends very near it: (See AMERICA, n° 105.). It is situated between 44 and 196 degrees of east longitude, and 1 and 74 degrees of north latitude. From the Dardanelles to the most eastern shore of Tartary, it is 4740 miles in length; and from the most southern point of Malacca to the most northern point of Nova Zembla, it is 4380 miles in breadth.

This vast extent of territory was successively governed in past times by the Assyrians, the Medes, the Persians, and the Greeks; but the immense regions of India and China were little known to Alexander, or the conquerors of the ancient world. Upon the decline of those empires, great part of Asia submitted to the Roman arms; and afterwards, in the middle ages, the successors of Mahomet, or, as they are usually called, Saracens, founded in Asia, in Africa, and in Europe, a more extensive empire than that of Cyrus, Alexander, or even the Roman when in its height of power. The Saracen greatness ended with the death of Tamerlane; and the Turks, conquerors on every side, took possession of the middle regions of Asia, which they still enjoy. Besides the countries possessed by the Turks and Russians, Asia contains at present three large empires, the Chinese, the Mogul, and the Persian; upon which the lesser kingdoms and sovereignties of Asia generally depend. The prevailing form of government in this division of the globe is absolute monarchy. If any of them can be said to enjoy some share of liberty it is the wandering tribes, as the Tartars and Arabs. Many of the Asiatic nations, when the Dutch first came among them, could not conceive how it was possible for any people to live under any other form of government than that of a despotic monarchy. Turkey, Arabia, Persia, part of Tartary, and part of India, profess Mahometanism. The Persian and Indian Mahometans are of the sect of Hali, and the others of that of Omar; but both own Mahomet for their law-giver, and the Koran for their rule of faith and life. In the other parts of Tartary, India, China, Japan, and the Asiatic Islands, they are generally heathens and idolaters. Jews are to be found

every where in Asia. Christianity, though planted here with wonderful rapidity by the apostles and primitive fathers, suffered an almost total eclipse by the conquests of the Saracens, and afterwards of the Turks. Incredible indeed have been the hazards, perils, and sufferings of popish missionaries, to propagate their doctrines in the most distant regions, and among the grossest idolaters; but their labours have hitherto failed of success, owing in a great measure to their own avarice, and the avarice and profligacy of the Europeans, who resort thither in search of wealth and dominion.

Asia may be divided into the following parts; Turkey in Asia, Arabia, Persia, the Mogul's Empire, with the two peninsulas of the Indies; Tibet, China, and Korea; Great and Little Buckaria, with Korasin; Tartary, Siberia, and the islands. The principal languages spoken in Asia are, the modern Greek, the Turkish, the Russian, the Tartarian, the Persian, the Arabic, the Malayan, the Chinese, and the Japanese. The European languages are also spoken upon the coasts of India and China.

Asia is looked upon as that part of the world which, of all others, has been most peculiarly distinguished by heaven. There it was the first man was created; there the patriarchs lived, the law was given to Moses, and the greatest and most celebrated monarchies were formed; from thence the first founders of cities and nations in other quarters of the world brought their colonies. Lastly, in Asia Jesus Christ appeared: there it was that he wrought the salvation of mankind, that he died and rose again; and from thence it is that the light of the gospel was diffused over all the world. Laws, arts, sciences, and religion, almost all had their original in Asia.

As Asia exceeds the other two parts of our continent, Europe and Africa, so it is superior to them in the serenity of its air, the fertility of its soil, the deliciousness of its fruits, the fragrant and balsamic qualities of its plants, spices, and gums; the salubrity of its drugs; the quantity, variety, beauty, and value of its gems; the richness of its metals, and the fineness of its silks and cottons. A great change indeed hath happened in that part of it called Turkey, which hath lost much of its ancient splendor, and from the most populous and best cultivated spot in Asia, is become a wild and uncultivated desert. The other parts of Asia continue much in their former condition; the soil being as remarkable for its fertility, as most of the inhabitants for their indolence, effeminacy, and luxury. This effeminacy is chiefly owing to the warmth of the climate, though in some measure heightened by custom and education; and the symptoms of it are more or less visible as the several nations are seated nearer or farther from the north. Hence the Tartars, who live near the same latitudes with us, are as brave, hardy, strong, and vigorous, as any European nation. What is wanting in the robust frame of their bodies among the Chinese, Mogul-Indians, and all the inhabitants of the more southern regions, is in a great measure made up to them by the vivacity of their minds, and ingenuity in various kinds of workmanship, which our most skilful mechanics have in vain endeavoured to imitate.

The chief rivers of Asia are, the Euphrates and Tigris,

Asia
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Asiatic.

gris, in Turkey; the Indus and Ganges, in India; the Kiang and Hoang-ho, in China; the Sir Amu and Wolga, in Western Tartary; the Saghalia Ula or Amur, in Eastern Tartary; the Irtysh, Oby, Jenisea, and Lena, in Siberia. The lakes are, that prodigious one called the *Caspian-Sea*; and near that another very large one, but lately known to us, called *Aral*, or the lake of eagles. The Baykal is in Siberia, the Kokonor near Tibet, and the Tong Ping in China. The chief mountains are, the Taurus in Turkey and Persia; the Imaus, between India and Tibet; and the Altay, in Tartary.

The Asiatic islands are very numerous, inasmuch that some reckon 150,000; but of this there is no certainty. However, they may be divided into those of the east, west, south and south-east. Those that lie on the east of Asia are, the islands of Jesso or Yedso, and Japan, with several small ones on the coast of Korea, the island of Formosa, and the Philippines. Those on the west are, the island of Cyprus, in the Mediterranean; Scanderoon, off Natolia, and the isle of Rhodes off Phischio, on the same coast. Those on the south are, the isles of the Maldives, in the Indian Sea; the isle of Ceylon, off Cape Komorin; with a great many small ones in the gulph of Bengal. Those on the south-east are, the isles of Sandi, as Sumatra, the isles of Java, Borneo, &c. the Moluccas, the isles of Kumbava, Timor, &c.

Asia Minor, or *Lesser Asia*; the same with Natolia. See NATOLIA.

ASIARCHÆ, (termed by St Paul, *Chief of Asia*, Acts xix. 31.) were the Pagan Pontiffs of Asia, chosen to superintend and have the care of the public games; which they did at their own expence: for which reason they were always the richest and most considerable men of the towns.

ASIDE, in the drama, something said by an actor, which some, or even all the other actors present, are supposed not to hear; a circumstance justly condemned as being unnatural and improbable.

ASITO, a town of Italy, in Perugia, and in the Pope's territories. E. Long. 23. 40. N. Lat. 43. 0.

ASILUS, or HORNET-FLY, a genus of insects belonging to the order of insecta diptera. It has two wings; and a horny, strait, two-valved beak. There are 17 species of this insect. Many of them wound in a very painful manner, and are particularly troublesome to cattle in low meadows; others of them are quite harmless. See Plate LIV.

ASINARA, an island of Italy, on the western coast of Sardinia. E. Long. 8. 30. N. Lat. 41. 0.

ASINIUS (Pollio), consul and Roman orator, distinguished himself under Augustus by his exploits and his literary works. He is frequently mentioned with praises by Horace and Virgil, and is said to have collected the first library at Rome. He died at Frescati, at 80 years of age.

ASIONGABER, ESIONGEBER, or EZIONGEBER, a town of Arabia Petræa, on the bay of Elath, a part of the Arabian Gulf; the dock or station for the ships of Solomon and Jehosaphat; an ancient town, mentioned also by Moses. It was afterwards called *Berenice*, (Josephus).

ASISIA, or ASSISIA, a town of Liburnia (Ptolemy, Antonine), now in ruins, but exhibiting many

monuments of antiquity. It is the Assesia or Asseria of Pliny. This author, after having specified the Liburnian cities that were obliged to attend the congress or diet of Scardona, adds to the catalogue the free Asserians *immunesque Asseriatæ*; and this people who created their own magistrates, and were governed by their own municipal laws, were no doubt more rich and powerful than their neighbours.

The vestiges of the walls of Asseria that still remain, are a sufficient proof of this; for their circumference is clearly distinguishable above ground, and measures 3600 Roman feet. The space inclosed by them forms an oblong polygon, and they are built with common Dalmatian marble; but not taken from the hill on which they stand, for that furnishes only soft stone. The walls are invested, both inside and out, with this marble: some of the stones are ten feet long, and they are of all considerable dimensions. The thickness of these fortifications is commonly about eight feet: but at the narrowest extremity, which falls towards the foot of the hill, they are eleven feet thick; and, in some parts, their height still above ground reaches to near 30 feet. An antiquary, or even a simple lover of the fine arts, or of erudition, the Abbé Fortis observes, cannot help wishing at Podgraje (the modern name of Asseria), that some powerful hand *quicquid sub terra est in apricum proferit*: and such a wish becomes stronger when he reflects, that since the destruction of that city no search has ever been made under ground, with a view to discover any thing curious; and yet these walls without doubt inclose a valuable deposit of antiquities, thrown down in heaps, who knows by what cause; perhaps naturally by an earthquake, or perhaps by a sudden inundation of barbarians, which is still worse. The gate now demolished, the considerable height of the walls to be seen in several places from without, some pieces of thick walls that still appear levelled to the ground among the bushes, are circumstances which give ground to hope that many costly monuments might be recovered out of these ruins. The magnificence of the remaining wall, and the many pieces of well cut stone and fine marble scattered over the contiguous fields, afford sufficient proof that both good taste and grandeur once flourished in that country. In the midst of the rubbish which covers the remains of Asseria, the parish-church of the little village stands insulated; it is built of broken pieces of ancient ruins, taken as they happened to be nearest, mixed with mutilated inscriptions, and fragments of noble cornices.

ASKELON. See ASCALON.

ASKERON, a place five miles from Doncaster, noted for a medicinal spring. It is a strong sulphureous water, and is slightly impregnated with a purging salt. It is recommended internally and externally in strumous and other ulcers, scabs, leprosy, and similar complaints. It is good in chronic obstructions, and in cases of worms and foulness of the bowels.

ASISIO, or ASITIO, a city of the Pope's territories in Italy, situated about 16 miles east of Perugia. E. Long. 13. 35. N. Lat. 43.

ASKRIG, a town in the N. Riding of Yorkshire. W. Long. 0. 5. N. Lat. 53. 50.

ASLANI, in commerce, a silver coin, worth from 115 to 120 aspers. See ASPER.

ASMONEUS,

Assia
||
Assiani.

Asmoneus

||
Afor.

ASMONEUS, or **ASSAMONEUS**, the father of Simon, and chief of the Asmoneans, a family that reigned over the Jews during 126 years.

ASNA, or **ESNA**, a town in Upper Egypt, seated upon the Nile, believed by some authors to be the ancient Syena, though others say the ruins of it are still to be seen near Assuan. It is so near the cataracts of the Nile, that they may be heard from thence. It contains several monuments of antiquity; and among the rest an ancient Egyptian temple, pretty entire, all painted throughout, except in some places that are effaced by time. The columns are full of hieroglyphic figures. This superb structure is now made use of for a stable, wherein they put oxen, camels, and goats. A little way from thence are the ruins of an ancient nunnery, said to be built by St Helena, surrounded with tombs.—Asna is the principal town in these parts, and the inhabitants are rich in corn and cattle. They drive a considerable trade into Lower Egypt and Nubia, by means of the Nile, and also by the caravans that pass over the desert. The inhabitants are all Arabs, except about 200 Copts, the ancient inhabitants, and a sort of Christians. They are under the government of the Turks, who have a *cadi*, and the Arabs have two sheriffs of their own nation. E. Long. 31. 40. N. Lat. 38. 15.

ASOLA, a town of the Bressan in Italy, belonging to the republic of Venice. E. Long. 14. 18. N. Lat. 45. 15.

ASOLO, a town of Italy, in the Trevisan, seated on a mountain 17 miles north west of Trevisan, and 10 north-east of Bassano. E. Long. 12. 2. N. Lat. 45. 49.

ASOPH, a town of Coban Tartary, in Asia, seated on the river Don, near its mouth, a little to the east of the Palus Mæotis, or Sea of Azoph. It has been several times taken and retaken of late years; but in 1739, the contending powers agreed that the fortifications should be demolished, and the town remain under the dominion of Russia. E. Long. 41. 30. N. Lat. 47. 18.

ASOPUS, a river of Phrygia Major, which, together with the Lycus, washes Laodicea, (Pliny).—Another of Bæotia, which running from mount Cithæron, and watering the territory of Thebes; separates it from the territory of Platæa, and falls with an east course into the Euripus, at Tanagra. On this river Adrastus king of Sicyon built a temple to Nemesis, thence called *Adrasteia*. From this river Thebae came to be surnamed *Asopides*, (Strabo). It is now called *Asopo*. A third Asopus, a river of Peloponnesus, which runs by Sicyon, (Strabo); and with a north west course falls into the Sinus Corinthiacus, to the west of Corinth.—A fourth, a small river of the Locri Epicnemidii, on the borders of Thessaly, (Pliny); rising in Mount Oeta, and falling into the Sinus Maliacus.

ASOPUS, a town of Laconica, (Pausanias); on the Sinus Laconicus, with a port in a peninsula, between Boæ to the east, and the mouth of the Eurotas to the west. The citadel only remains standing, now called by the sailors *Castel Rampano*.

ASOR, or **HAZOR** (anc. geog.), a town of the tribe of Judah, to the south-west, on the borders of Ascalon, (Joshua); as also Hasor-Hadata, translated by the seventy *Asor* *Esor* (id).—Another Afor, A-

forus, or Hazor, a town of Galilee; called the capital of all the kingdoms to the north of Palestine. It was taken by Joshua; the inhabitants were put to the sword, and their houses burnt. It was afterwards rebuilt (Judges, 1 Sam.); but remained still in the hands of the Canaanites, though in the lot of the tribe of Naphthali, (Joshua). It lay to the north of the Lacus Samachonites, called in Scripture the *Waters of Merom* (Josephus).

ASOW, a celebrated and important fortress of Russia, once a place of considerable trade, but now demolished. It was situated in the district of Bachmut, near the place where the Greeks many centuries ago built the city of Tanais, which was very famous for its trade, and underwent many vicissitudes. The Genoese, who settled a trade with Russia soon after the discovery of Archangel by Captain Chancellor, became masters of this place, and gave it the name of *Tana*, or *Catana*; but the Tartars, who were very powerful in these parts, seem to have been in possession of it long before; for, as Busching informs us, there are Asow coins yet extant, on which is the name of *Taktamys-Kan*. From the Genoese it fell into the hands of the Turks, lost its trade and became an inconsiderable town. In 1637, it was taken by the Cossacks, who defended it against the Turks in 1641, and next year set fire to it, and blew it up. The Turks rebuilt it with strong fortifications. The Russians laid claim to it in 1672, and took it in 1696; but, by the treaty of Pruth in 1711, it was restored to the Turks. In 1736, the Russians became masters of Asow; but by the treaty of Belgrade they were obliged to relinquish it, and entirely destroy the place.

ASP, in natural history, a small poisonous kind of serpent, whose bite gives a speedy but easy death. It is said to be thus denominated from the Greek *ασπίς*, *shield*, in regard to the manner of its lying convolved in a circle, in the centre of which is the head, which it exerts, or raises, like the umbo or umbilicus of a buckler. This species of serpent is very frequently mentioned by authors; but so carelessly described, that it is not easy to determine which, if any of the species known at present, may properly be called by this name. It is said to be common in Africa, and about the banks of the Nile; and Bellonius mentions a small species of serpent which he had met with in Italy, and which had a sort of callous excrescence on the forehead, which he takes to have been the aspis of the ancients. It is with the asp that Cleopatra is said to have dispatched herself, and prevented the designs of Augustus, who intended to have carried her captive to adorn his triumphal entry into Rome. But the fact is contested: Brown places it among his vulgar errors. The indications of that queen's having used the ministry of the asp, were only two almost insensible pricks found in her arm; and Plutarch says it is unknown what she died of. At the same time, it must be observed, that the slightness of the pricks found in her arm furnishes no presumption against the fact; for no more than the prick of a needle-point dipt in the poison was necessary for the purpose. See the article SERPENT.

Lord Bacon makes the asp the least painful of all the instruments of death. He supposes it to have an affinity to opium, but to be less disagreeable in its operation; and his opinion seems to correspond with the

Asow,
Asp.

Aspa
||
Asparagus.

accounts of most writers, as well as with the effects described to have been produced upon Cleopatra; for which see the article already referred to.

The ancients had a plaster called *δὲ Ασπίδων*, made of this terrible animal, of great efficacy as a discutient of *strumæ* and other indurations, and used likewise against pains of the gout. The flesh and skin, or *exuviae*, of the creature, had also their share in the ancient *medicaria medica*.

ASPA, a town of Parthia, (Ptolemy); now *Ispahan*, (Holstenius). In Ptolemy the latitude seems to agree, being 33° ; but whether the longitude does, is a question. E. Long. 51. Lat. 32. 30.

ASPALATHUS, AFRICAN BROOM: a genus of the *decandria* order, belonging to the *diadelphja* class of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The calyx consists of 5 divisions: the pod is oval, and contains 2 seeds. Of this genus there are 19 species; all of which are natives of warm climates, and must be preserved in stoves by those who would cultivate them here. The rose-wood, whence the *oleum rhodii* is obtained, is one of the species, but of which we have yet had no particular description. The wood is heavy, oleaginous, somewhat sharp and bitter to the taste, of a strong smell and purple colour. It is called *rose wood* or *lignum Rhodium*, either on account of its sweet smell, or of its growth in the island of Rhodes. It was anciently in much repute as an astringent, strengthener, and drier; but it is now disused in internal practice. It affords an oil of an admirable scent, reputed one of the best of perfumes: it is chiefly used in scenting pomatums and liniments.

ASPARAGUS, SPARAGUS, SPERAGE, OR SPARROW-GRASS: A genus of the *monogynia* order, belonging to the *hexandria* class of plants; and in the natural method ranking under the 11th order, *Sarmentaceæ*. The calyx is *quinquepartite*, and erect; the three inferior petals are bent outwards; the berry has three cells, and contains two seeds.—The species are 10; but the only one cultivated in the gardens is that with an upright herbaceous stalk, bristly leaves, and equal stipula, or the common asparagus. The other species are kept only in the gardens of the curious for the sake of variety.

Culture. The garden asparagus is with great care cultivated for the use of the table. The propagation of this useful plant is from seed; and as much of the success depends upon the goodness of the seed, it is much better to save it than to buy it at the shops. The manner of saving it is this: Mark with a stick some of the fairest buds; and when they are run to berry, and the stalks begin to dry and wither, cut them up; rub off the berries into a tub, and pouring water upon them, rub them about with your hands; the husks will break and let out the seed, and will swim away with the water in pouring it off; so that in repeating this two or three times, the seeds will be clean washed, and found at the bottom of the tub. These must be spread on a mat to dry, and in the beginning of February must be sown on a bed of rich earth. They must not be sown too thick, and must be trod into the ground, and the earth raked over them smooth: the bed is to be kept clear of weeds all the summer; and in October, when the

stalks are withered and dry, a little rotten dung must be spread half an inch thick over the whole surface of the bed. The spring following, the plants will be fit to plant out for good; the ground must therefore be prepared for them by trenching it well, and burying a large quantity of rotten dung in the trenches, so that it may lie at least six inches below the surface of the ground: when this is done, level the whole plot exactly, taking out all the loose stones. This is to be done just at the time when the asparagus is to be planted out; which must be in the beginning of March, if the soil is dry and the season forward; but in a wet soil, it is better to wait till the beginning of April, which is about the season that the plants are beginning to shoot. The season being now come, the roots must be carefully taken up with a narrow-pronged dung-fork, shaking them out of the earth, separating them from each other, and observing to lay all their heads even, for the more convenient planting them; which must be done in this manner. Lines must be drawn at a foot distance each, straight across the bed; these must be dug into small trenches of six-inches deep, into which the roots must be laid, placing them against the sides of the trench with their buds in a right position upwards, and so that, when the earth is raked over them, they may be two inches under the surface of the ground. Between every four rows a space of two feet and a half should be left for walking in, to cut the asparagus. When the asparagus is thus planted, a crop of onions may be sown on the ground, which will not at all hurt it. A month after this, the asparagus will come up, when the crop of onions must be thinned, and the weeds carefully cleared away. About August the onions will be fit to pull up. In October following cut off the shoots of the asparagus within two inches of the ground, clear well all weeds away, and throw up the earth upon the beds, so as to leave them five inches above the level of the alleys. A row of colworts may be planted in the middle of the alleys, but nothing must be now sown on the beds. In the spring the weeds must be howed up, and all the summer the beds kept clear of weeds. In October they must be turned up and earthed again, as the preceeding season. The second spring after planting, some of the young asparagus may be cut for the table. The larger shoots should only be taken, and these should be cut at two inches under ground, and the beds every year managed as in the second year. But as some people are very fond of early asparagus, the following directions are given by which it may be obtained any time in winter: Plant some good roots at one year old in a moist rich soil, about eight inches apart; the second and third years after planting, they will be ready to take up for the hot beds; these should be made pretty strong, about three feet thick, with new stable dung that has fermented a week or more; the beds must be covered with earth six inches thick; then against a ridge made at one end, begin to lay in your plants, without trimming or cutting the fibres, and between every row lay a little ridge of fine earth, and proceed thus till the bed is planted; then cover the bed two inches thick with earth, and encompass it with a straw-band, and in a week, or as the bed is in the temper, put on the frames and glasses, and lay on three inches thick of fresh

Aspasia
Aspasticum.

fresh earth over the beds, and give them air and add fresh heat to them as it requires. These beds may be made from November till March, which will last till the natural grass comes on.

Medicinal Uses. The roots have a bitterish mucilaginous taste, inclining to sweetness; the fruit has much the same kind of taste; the young shoots are more agreeable than either. Asparagus promotes appetite, but affords little nourishment. It gives a strong ill smell to the urine in a little time after eating it, and for this reason chiefly is supposed to be diuretic: it is likewise esteemed aperient and deobstruent; the root is one of the five called *opening roots*. Some supposed the shoots to be most efficacious; others, the root; and others, the bark of the root. Stahl is of opinion that none of them have any great share of the virtues usually ascribed to them. Asparagus appears from experience to contribute very little either to the exciting of urine when suppressed, or increasing its discharge; and in cases where aperient medicines generally do service, this has little or no effect.

ASPASIA of MILETUS, a courtesan who settled at Athens under the administration of Pericles, and one of the most noted ladies of antiquity. She was of admirable beauty: yet her wit and eloquence, still more than her beauty, gained her extraordinary reputation among all ranks in the republic. In eloquence she surpassed all her contemporaries; and her conversation was so entertaining and instructive, that notwithstanding the dishonourable commerce she carried on in female, virtue, persons of the first distinction, male and female, resorted to her house as to an academy: she even numbered Socrates among her hearers and admirers. She captivated Pericles in such a manner, that he dismissed his own wife, in order to espouse her; and, by her universal knowledge, irresistible elocution, and intriguing genius, she in a great measure influenced the administration of Athens. She was accused of having excited, from motives of personal resentment, the war of Peloponnesus; yet, calamitous as that long and obstinate conflict proved to Greece, and particularly to Athens, it may be suspected that Aspasia occasioned still more incurable evils to both. Her example, and still more her instructions, formed a school at Athens, by which her dangerous profession was reduced into system. The companions of Aspasia served as models for painting and statuary, and themes for poetry and panegyric. Nor were they merely the objects, but the authors of many literary works, in which they established rules for the behaviour of their lovers, particularly at table; and explained the art of gaining the heart and captivating the affections. The dress, behaviour, and artifices of this class of women, became continually more seductive and dangerous; and Athens thenceforth remained the chief school of vice and pleasure, as well as of literature and philosophy.

ASPASIA, among ancient physicians, a constrictive medicine for the *pudenda muliebria*. It consisted only of wool, moistened with an infusion of unripe galls.

ASPASTICUM, (from ἀσπάζομαι, "I salute," in ecclesiastical writers, a place, or apartment, adjoining to the ancient churches, wherein the bishop and presbyters sat, to receive the salutations of the persons who came to visit them, desire their blessing, or consult them on business.—This is also called *aspaticum dia-*

conicum, receptorium, metatorium, or mesatorium, and salutatorium: in English, "greeting-house."

ASPECT, in astronomy, denotes the situation of the planets and stars with respect to each other.

There are five different aspects, 1. Sextil aspect is when the planets or stars are 60° distant and marked thus *. 2. The quartile, or quadrate, when they are 90° distant, marked □. 3. Trine, when 120° distant, marked Δ. 4. Opposition, when 180° distant, marked ∅. And, 5. Conjunction, when both in the same degree, marked ∅.

Kepler, who added eight new ones, defines aspect to be the angle formed by the rays of two stars meeting on the earth, whereby their good or bad influence is measured; for it is to be observed, that these aspects being first introduced by astrologers, were distinguished into benign, malignant, and indifferent; the quartile and opposition being accounted malign; the trine and sextile, benign or friendly; and the conjunction, indifferent.

ASPEN-TREE, in botany. See POPULUS.

ASPER, in grammar, an accent peculiar to the Greek language, marked thus (´); and importing, that the letters over which it is placed ought to be strongly aspirated, or pronounced as if an *h* were joined with them,

ASPER, or *Aspre*, in commerce, a Turkish coin, three of which make a MEDINE.

ASPERA ARTERIA, in anatomy, the same with the windpipe or trachea. See ANATOMY, n° 116.

ASPERIFOLIATE, or ASPERIFOLIOUS, among botanists, such plants as are rough-leaved, having their leaves placed alternately on their stalks, and a monopetalous flower divided into five parts.—They constitute an order of plants in the *Fragmenta methodi naturalis* of Linnæus, in which are these genera, viz. *tournefortia*, *cerinthe*, *symphytum*, *pulmonaria*, *anchusa*, *lithospermum*, *myosotis*, *heliotropium*, *cynoglossum asperugo*, *lycopsis*, *echium*, *borrago*: *magis minusve olearceæ, mucilaginosæ, & glutinosæ sunt.* Lin. In the present system, these are among the pentandria monogynia.

ASPERIFOLIÆ PLANTÆ, rough leaved plants. The name of a class in Hermannus, Boerhaave, and Rays methods, consisting of plants which have four naked seeds, and whose leaves are rough to the touch.

In Tournefort's System, these plants constitute the third section or order of the second class; and in Linnæus's Sexual method, they make a part of the pentandria monogynia.

ASPERITY, the inequality of the surface of any body, which hinders the hand from passing over it freely.—From the testimony of some blind persons, it has been supposed that every colour hath its particular degree of asperity: though this has been denied by others. See the article BLIND.

ASPEROSA, a town of Turkey, in Europe; it is a bishop's see, situated on the coast of the Archipelago. E. Long. 25. 20. N. Lat. 40. 58.

ASPERUGO, SMALL WILD BUGLOSS, in botany: A genus of the pentandria monogynia class; and in the natural method ranking under the 49th order, *Asperifolia*. The calyx of the fruit is compressed, with folds flatly parallel, and sinuous. There are two species, viz. the procumbens, or wild bugloss, a native of Britain;

Aspect
||
Asperugo.

Asperula, Britain; and the *Egyptiaca*, a native of Egypt. *Hortenses*, goats, sheep, and swine eat the first species; cows are not fond of it.

ASPERULA, WOODROOF: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under the 47th order, *Stellate*. The corolla is infundibuliform; and the capsule contains two globular seeds. There are two species, the *cynanchica*, and the *odorata*. Both of them grow wild in Britain, so are seldom admitted into gardens. The first is found on chalky hills. The latter is a low umbelliferous plant, growing wild in woods and copses, and flowering in May. It has an exceeding pleasant smell, which is improved by moderate exsiccation; the taste is subsaline, and somewhat austere. It imparts its flavour to vinous liquors. *Asperula* is supposed to attenuate viscid humours, and strengthen the tone of the bowels; it is recommended in obstructions of the liver and biliary ducts, and by some in epilepsies and palsies; modern practice has nevertheless rejected it. The smell of it is said to drive away ticks and other insects. The roots of the first are used in Sweden to dye red.

ASPHALTITES, so called from the great quantity of bitumen it produces; called also the *Dead Sea*; and from its situation, the *East Sea*; the *Salt Sea*, the *Sea of Sodom*, the *Sea of the Desert*, and the *Sea of the Plain*, by the sacred writings: A lake of Judea.

Many things have been said and written of this famed, or, if they were indeed true, rather infamous lake; such as that it arose from the submersion of the vale of Siddim, where once stood, as is commonly reported, the three cities which perished in the miraculous conflagration, with those of Sodom and Gomorrah, for their unnatural and detestable wickedness: on which account this lake has been looked upon as a lasting monument of the just judgment of God, to deter mankind from such abominations. Hence it is added, that the waters of the lake are so impregnated with salt, sulphur, and other bituminous stuff, that nothing will sink or live in it; and that it casts such stench and smoke, that the very birds die in attempting to fly over it. The description likewise of the apples that grew about it, fair without, and only ashes and bitterness within, were looked upon as a farther monument of God's anger. So likewise the description which many travellers give not only of the lake, but of all the country round about, of the whole appearing dreadful to behold, all sulphureous, bituminous, stinking, and suffocating: and lastly, what hath been farther affirmed of the ruins of the five cities being still to be seen in clear weather, and having been actually seen in these latter times; all these surprising things, and ill-grounded notions, though commonly, and so long, received among Christians, have been of late so much exploded, not only by the testimony of very credible witnesses, but even by arguments drawn from scripture, that we must give them up as inventions, unless we will suppose the face and nature of all these things to have been entirely changed. Those, in particular, of bodies not sinking in the water, and of birds being stifled by the exhalations of it, appear now false in fact. It is true, the quantity of salt, alum, and sulphur, with which it is impregnated, render it so much specifically heavier (Dr Pococke says one-fifth) than fresh water, that bodies will not so

easily sink: yet that author, and others, assure us, *Asphaltites* they have swam and dived in it; and, as to the birds, we are told likewise, that they will fly over it without any harm. To reconcile these things with the experiments which Pliny† tells us had been made by Vespasian, is impossible, without supposing that those ingredients have been since much exhausted, which is not at all improbable; such quantities of them, that is, of the bitumen and salt, having been all along, and being still taken off, and such streams of fresh water continually pouring into it, as may reasonably be supposed to have considerably diminished its gravity and denseness. For, with respect to its salt, we are told, the Arabs made quantities of it from that lake, in large pits about the shore, which they fill with that water, and leave to be crystallized by the sun. This salt is in some cases much commended by Galen, as very wholesome, and a strengthener of the stomach, &c. on account of its unpleasant bitterness.

What likewise relates to the constant smoke ascending from the lake, its changing the colour of its water three times a-day, so confidently affirmed by Josephus‡ and other ancients, and confirmed by prince Radziville and other moderns, who pretend to have been eyewitnesses of it, is all now in the same manner exploded by others of more modern date, and of at least equal candour. The unhealthiness of the air about the lake was affirmed by Josephus and Pliny, especially on the west: the monks that live in the neighbourhood confirm the same, and would have dissuaded Dr Pococke from going to it on that account; and, as he ventured to go and bathe in it, and was, two days after, seized with a dizziness, and violent pain in the stomach which lasted near three weeks, they made no doubt but it was occasioned by it; and he doth not seem to contradict them. As to the water, it is, though clear, so impregnated with salt, that those who dive into it come out covered with a kind of saline matter. There is one remarkable thing relating to this lake, generally agreed on by all travellers and geographers; viz. that it receives the waters of Jordan, a considerable river, the brooks of Jabbok, Kishon, Arnon, and other springs, which flow into it from the adjacent mountains, and yet never overflows, though there is no visible way to be found by which it discharges that great influx. Some naturalists have been greatly embarrassed to find a discharge for these waters; and have therefore been inclined to suspect the lake had a communication with the Mediterranean. But, besides that we know of no gulph to corroborate this supposition, it has been demonstrated by accurate calculations, that evaporation is more than sufficient to carry off the waters brought by the river. It is, in fact, very considerable; and frequently becomes sensible to the eye, by the fogs with which the lake is covered at the rising of the sun, and which are afterwards dispersed by the heat. It is inclosed on the east and west with exceeding high mountains, many of them craggy and dreadful to behold. On the north it has the plain of Jericho; or, if we take in both sides of the Jordan, it has the Great Plain, properly so called, on the south; which is open, and extends beyond the reach of the eye. Josephus gives this lake 580 furlongs in length, from the mouth of the Jordan to the town of Segor, on the opposite end, that is about 22 leagues and about 150 furlongs,

† *Nat. Hist.*
lib. v. cap. 15.

‡ *Bel. Jud.*
lib. v. cap. 3.

Asphaltum furlongs, or 5 leagues, in its largest breadth: but our modern accounts commonly give it 24 leagues in length and 6 or 7 in breadth. On the west side of it is a kind of promontory, where they pretend to show the remains of Lot's metamorphosed wife. Josephus says it was still standing in his time; but when Prince Radziville inquired after it, they told him there was no such salt pillar or statue to be found in all that part. However, they have found means, about a century after him, to recover, as they pretended to assure Mr Maundrell, a block or stump of it, which may in time grow up, with a little art, into its ancient bulk.

It is to be observed here, that the name of *Dead Sea* is not to be found in the sacred writings; but hath been given to this lake because no creature will live in it, on account of its excessive saltiness, or rather bituminous quality; for the Hebrews rank sulphur, nitre, and bitumen, under the general name of *salt*. However, some late travellers have found cause to suspect the common report of its breeding no living creature; one of them having observed on the shore two or three shells of fish like those of an oyster, and which he supposes to have been thrown up by the waves, at two miles distance from the mouth of the Jordan, which he there takes notice of, lest they should be suspected to have been brought into the lake by that way. And Dr Pococke, though he neither saw fish nor shells, tells us, on the authority of a monk, that some sort of fish had been caught in it; and gives us his opinion, that as so many sorts live in salt-water, some kind may be so formed as to live in a bituminous one. Mr Volney, however, affirms, that it contains neither animal nor vegetable life. We see no verdure on its banks, nor are fish to be found within its waters. But he adds, that it is not true that its exhalations are pestiferous, so as to destroy birds flying over it. "It is very common (says he) to see swallows skimming its surface, and dipping for the water necessary to build their nests. The real cause which deprives it of vegetables and animals is the extreme saltiness of the water, which is infinitely stronger than that of the sea. The soil around it, equally impregnated with this salt, produces no plants; and the air itself, which becomes loaded with it from evaporation, and which receives also the sulphureous and bituminous vapours, cannot be favourable to vegetation: hence the deadly aspect which reigns around this lake. In other respects, the ground about it, however, is not marshy; and its waters are limpid and incorruptible, as must be the case with a dissolution of salt. The origin of this mineral is easy to be discovered; for on the south-west shore are mines of fossil salt, of which I have brought away several specimens. They are situated in the side of the mountains which extend along that border; and, for time immemorial, have supplied the neighbouring Arabs, and even the city of Jerusalem. We find also on this shore fragments of sulphur and bitumen, which the Arabs convert into a trifling article of commerce; as also hot fountains, and deep crevices, which are discovered at a distance by little pyramids built on the brink of them. We likewise find a sort of stone, which, on rubbing, emits a noxious smell, burns like bitumen, receives a polish like white alabaster, and is used for the paving of court-yards. At intervals, we also meet with unshapen blocks, which prejudiced eyes mistake for mutilated

statues, and which pass with ignorant and superstitious pilgrims for monuments of the adventure of Lot's wife; though it is no where said she was metamorphosed into stone like Niobe, but into salt, which must have melted the ensuing winter."

It is on account of this bitumen that it hath had the name of *Asphaltite Lake*, it being reported to have thrown up great quantities of that drug, which was much in use among the Egyptians, and other nations, for embalming of dead bodies. Josephus assures us, that in his days it rose in lumps as big as an ox without its head, and some even larger. But, whatever it may have formerly done, we are assured by Mr Maundrell and others, that it is now to be found but in small quantities along the shore, though in much greater near the mountains on both sides the lake. But the contrary is since affirmed by two or more late * travellers; the one of whom tells us, that it is observed to float on the surface of the water, and to come on the shore, after windy weather, where the Arabians gather it, and put it to all the uses that common pitch is used for, even in the composition of some medicines: and another † tells us, he was there informed, that it was raised at certain times from the bottom, in large hemispheres, which, as soon as they touch the surface, and are acted upon by the external air, burst at once, with great noise and smoke, like the *pulvis fulminans* of the chemists, dispersing themselves about in a thousand pieces. From both these judicious authors we may conclude the reason of Mr Maundrell's mistake, both as to the lake's throwing it up only on certain seasons (that reverend gentleman might chance to be there at the wrong time): and likewise as to his not observing it about the shores; seeing the Arabs are there ready to gather it as soon as thrown up: all of them describe it as resembling our black pitch, so as not to be distinguished from it but by its sulphureous smoke and stench when set on fire; and it hath been commonly thought to be the same with that which our druggists sell under the name of *bitumen Judaicum*, or *Jewish pitch*, though we have reason to think that this last is factitious, and that there is now none of the right asphaltum brought from Judea.

It hath, moreover, been confounded with a sort of blackish combustible stone thrown on the shore, and called by some *Moses's stone*, which, being held in the flame of a candle, will soon burn, and cast a smoke and intolerable stench: but with this extraordinary property, that though it loses much of its weight and colour, it becoming in a manner white, yet it diminishes nothing of its bulk. But these, Dr Pococke tells us, are found about two or three leagues from the shore. He concludes, however, from it, that a *stratum* of that stone under the lake is probably one part of the matter that feeds the subterraneous fire, and causes the bitumen to boil up out of it.

ASPALTUM, BITUMEN JUDÆICUM, OR JEW'S PITCH, is a light solid bitumen, of a dusky colour on the outside, and a deep shining black within; of very little taste; and having scarcely any smell, unless heated, when it emits a strong pitchy one. It is found in a soft or liquid state on the surface of the Dead Sea, and by age grows dry and hard. The same kind of bitumen is met with likewise in the earth, in other parts of the world, in China, America, and in some places of Europe, as the Carpathian hills, France, Neufchatel,

&c.

Asphaltites,
Asphaltum.

* Pococke's
Travels,
p. 56.

† Shaw's
Travels,
p. 374.

Asphaltum, &c. There are several kinds of Jews pitch in the shops: but none of them are the genuine sort, and have little other title to their name than their being artificially compounded by Jews: and as they are a medley of we know not what ingredients, their medicinal use begins to be deservedly laid aside, notwithstanding the discutient, resolvent, pectoral, and other virtues, attributed to this bitumen by the ancients. The true asphaltum was formerly used in embalming the bodies of the dead. The thick and solid asphaltum are at present employed in Egypt, Arabia, and Persia, as pitch for ships; as the fluid ones, for burning in lamps, and for varnishes. Some writers relate, that the walls of Babylon, and the temple of Jerusalem, were cemented with bitumen instead of mortar. This much is certain, that a true natural bitumen, that for instance which is found in the district of Neuschatel, proves an excellent cement for walls, pavements, and other purposes, uncommonly firm, very durable in the air, and not penetrable by water. The watch and clock makers use a composition of asphaltum, fine lamp black, and oil of spike or turpentine, for drawing the black figures on dial-plates: this composition is prepared chiefly by certain persons at Augsburg and Nuremberg. See the preceding article.

ASPHODELUS, ASPHODEL, OR KING'S SPEAR: A genus of the monogynia order, belonging to the hexandria class of plants. The calyx is divided into six parts; and the nectarium consists of six valves, covering the nectarium.—The

Species are five. 1. The luteus, or common yellow asphodel, hath roots composed of many thick fleshy fibres, which are yellow, and joined into a head at the top; from whence arise strong round single stalks near three feet high, garnished on the upper part with yellow star-shaped flowers, which appear in June, and the seeds ripen in autumn. 2. The ramosus, or branching asphodel, hath roots composed of fleshy fibres, to each of which is fastened an oblong bulb as large as a small potato; the leaves are long and flexible, having sharp edges; between these come out the flower stalks, which arise more than three feet high, sending forth many lateral branches. The upper parts of these are adorned with many white star-shaped flowers, which grow in long spikes flowering gradually upward. They come out in the beginning of June, and the seeds ripen in autumn. 3. The ramosus, or unbranched asphodel, hath roots like the second, but the leaves are longer and narrower; the stalks are single, never putting out any side-branches. The flowers appear at the same time with the former, are of a purer white, and grow in longer spikes. 4. The albus, with keel-shaped leaves, hath roots composed of smaller fibres than the two last, nor are the knobs at bottom half so large; the leaves are long, almost triangular, and hollow like the keel of a boat; the stalks seldom rise above two feet high, and divide into several spreading branches; these are terminated by loose spikes of white flowers smaller than those of the former. 5. The stulosus, or annual branching spiderwort, hath roots composed of many yellow fleshy fibres; the leaves are spread out from the crown of the root, close to the ground, in a large cluster; these are convex on their under side, but plain above. The flower stalks rise immediately from the root, and grow about two feet high, dividing into

three or four branches upward, which are adorned with white starry flowers, with purple lines on the outside. These flower in July and August, and their seeds ripen in October.

Culture. The way to increase these plants is by parting their roots in August, before they shoot up their fresh green leaves. They may also be raised from seeds sown in August; and the August following the plants produced from these may be transplanted into beds, and will produce flowers the second year. They must not be planted in small borders, among tender flowers; for they will draw away all the nourishment, and starve every thing else.

The Lancashire asphodel is thought to be very noxious to sheep, whenever, through poverty of pasture, they are necessitated to eat it; although they are said to improve much in their flesh at first, they afterwards die with symptoms of a diseased liver. This is the plant of which such wonderful tales have been told by Pauli, Bartholine, and others, of its softening the bones of such animals as swallow it; and which they thence called *gramen ossifragum*. Horned cattle eat it without any ill effect.

ASPHURELATA, in natural history, are semi-metallic fossils, fusible by fire, and not malleable in their purest state, being in their native state intimately mixed with sulphur and other adventitious matter, and reduced to what are called *ores*.

Of this series of fossils there are only five bodies, each of which makes a distinct genus; viz. antimony, bismuth, cobalt, zinc, or quicksilver.

ASPICUETA (Martin de), commonly called the Doctor of Navarre, or *Doctor Navarrus*, was descended of a noble family, and born the 13th of December 1491, at Varasyn, a small city of Navarre, not far from Pampeluna. He entered very young into the monastery of Regular canons at Roncevaux, where he took the habit, which he continued to wear after he left the convent. He studied classical learning, natural and moral philosophy, and divinity at Alcala, in New Castile, adopting chiefly the system of Petrus Lombardus, commonly called the *Master of the Sentences*. He applied to the study of the law at Ferrara, and taught it with applause at Toulouse and Cahors. After being first professor of canon law at Salamanca for 14 years, he quitted that place to be professor of law at Coimbra, with a large salary. The duties of this office he discharged for the space of 20 years, and then resigned it to retire into his own country, where he took care of his nieces, the daughters of his deceased brothers. Having made a journey to Rome to plead the cause of Bartholomeo de Caranza archbishop of Toledo, who had been accused of heresy before the tribunal of the inquisition in Spain, and whose cause was, by the Pope's order, to be tried in that city, Aspicueta's writings, which were well known, procured him a most honourable reception. Pope Pius V. made him assistant to cardinal Francis Aciat, his vice penitentiary; and Gregory XIII. never passed by his door without calling for him, and stopped sometimes a whole hour to talk with him in the street. His name became so famous, that even in his lifetime the highest encomium on a learned man was to call him a *Navarrus*. He was consulted as an oracle. By temperance he prolonged his life to a great length. His oeconomy enabled him to give sub-

Encyclopaedia britannica or a dictionary of arts, sciences and
miscellaneous literature

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